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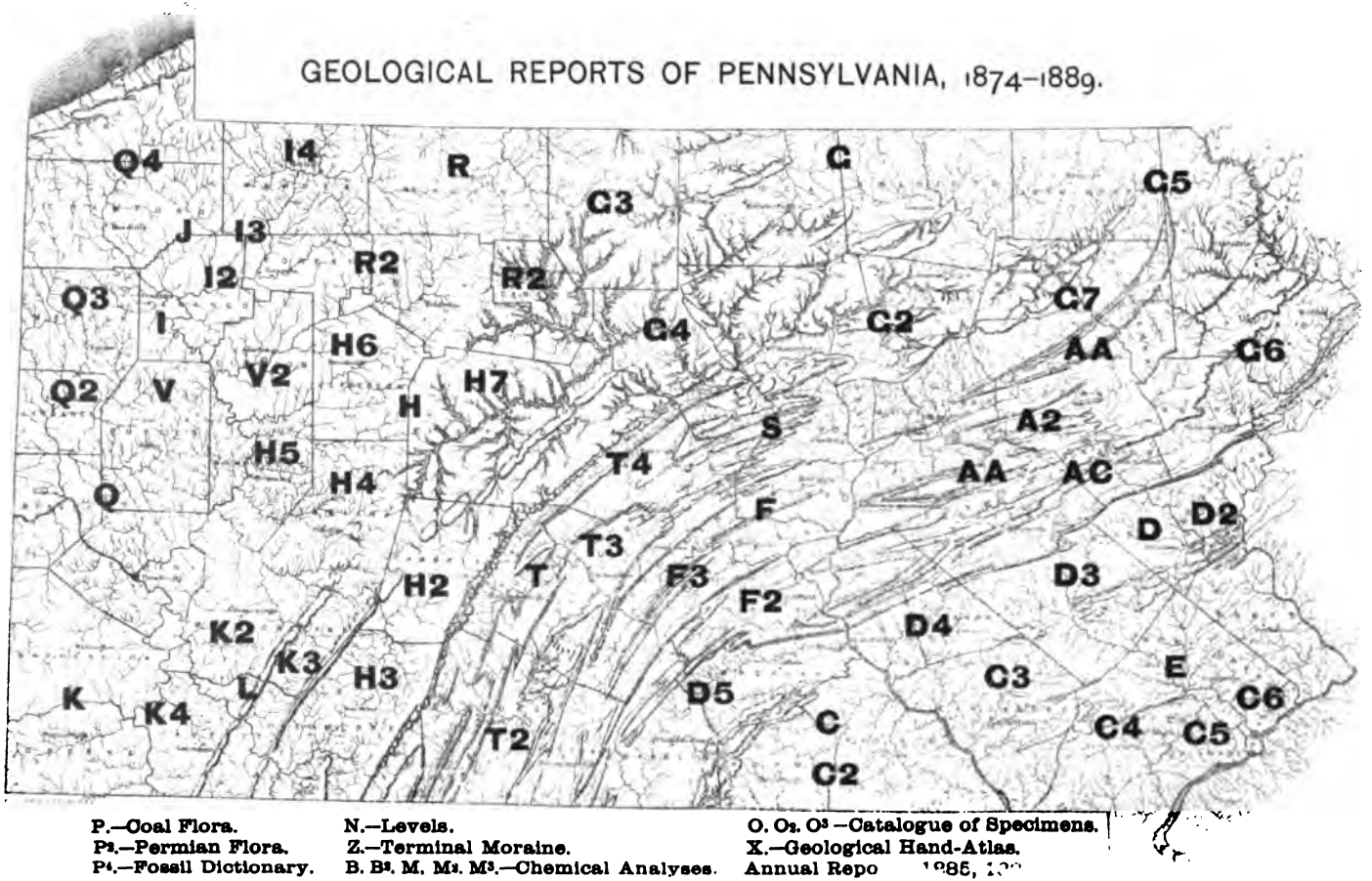
GEOLOGICAL REPORTS OF PENNSYLVANIA, 1874–1889.
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X.—Geological Hand-Atlas.
Annual Repo 1885, 1

GEOLOGICAL SURVEY OF PENNSYLVANIA:

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1889.

CATALOGUE

OF THE

GEOLOGICAL MUSEUM.

PART III.

1. BERKS COUNTY COLLECTIONS, by E. V. d'Invilliers. No. 8975.
2. GLACIAL DRIFT COLLECTIONS, by H. C. Lewis. No. 9245.
3. WARREN COUNTY COLLECTIONS, by F. A. Randall. No. 9392.
4. OIL REGION COLLECTIONS, by John F. Carll. No. 9686.
5. MINERALOGICAL COLLECTION, by Dr. F. A. Genth. No. 10814.
6. EURYPTERID COLLECTION, given by Hon. I. F. Mansfield. No. 10950.
7. FOSSIL PLANT COLLECTIONS, by Leo Lesquereux. No. 11074.
8. PERRY COUNTY COLLECTIONS, by E. W. Claypole. No. 11624.
9. SPECIAL PALÆONTOLOGICAL COLLECTION of C. E. Hall; revised in detail by George B. Simpson. Nos. 201 to C7.
10. WARREN COUNTY COLLECTION, revised by G. B. Simpson. No. 9467.

HARRISBURG:
PUBLISHED BY THE BOARD OF COMMISSIONERS
FOR THE GEOLOGICAL SURVEY.
1889.

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Secretary of the Board of Commissioners of the Geological Survey,

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PHILADELPHIA, *February 5, 1889.*

To His Excellency Governor JAMES A. BEAVER, *Chairman of the Board of Commisioners of the Geological Survey of Pennsylvania :*

SIR: I have the honor to present for your approval Part Third and last of the Catalogue of Geological Specimens arranged and labeled for use.

Mr. E. V. d'Invilliers' catalogue was originally printed in his Report on the Mountain Region of Berks county (D3, Vol. 2, 1882), and is here reprinted, the specimens having received their museum label numbers from 8975 to 9244.

Prof. Henry Carvill Lewis (whose early death is so sincerely deplored in the scientific world which he adorned) was not prepared with a proper catalogue of the interesting specimens of glacial erratics which he collected in the course of his study of the Terminal Moraine, when his Report upon it (Z, 1884), was printed. His suite of specimens find their place in this volume from No. 9245 to No. 9391.

Dr. F. A. Randall's important collection of Waverly and Chemung fossils from the the rock outcrops around Warren was summarized by Mr. Carll in his Fourth Report on the Oil Region (IIII, 1883), and is here given in detail, with its museum label numbers from 9392 to 9685.—During the past year, 1888, Mr. Geo. B. Simpson has reviewed this important collection and corrected, with the approval of Prof. James Hall, of Albany, some of the generic and specific names. A list of these corrections relating to specimens coming between No. 9467 and No. 9625 will be found at the end of this volume.

Mr. John F. Carll's collections throughout the Oil Region, illustrating his four Reports, and classified by himself, carry the series of Museum label numbers from 9686 to 10813.—The collection is large, varied and valuable; shows every kind of conglomerate and oil-sand rock; proves the important distinction between the lower "flat-pebble" and higher "round pebble" conglomerates; is rich in fish and plant remains; and includes a rare collection of sand pumpings and crude oil samples, arranged with that admirably systematic method to which

Mr. Carll's eminent success in this branch of the science has been so largely due. When rock specimens and fossils are lost they can almost always be replaced by others identical or very similar; but the time will come when no price or pains will avail to make a collection of under-ground rock specimens such as is here preserved for the instruction of the next generation of geologists.

Dr. F. A. Genth's collection of mineralogical specimens, mostly from the south-eastern region of the State, and especially valuable for his personal determination of them, ranges from 10814 to 10949.

Dr. Leo Lesquereux's specimens of fossil plants, collected previous to 1887, of the greatest value as types of his species in the Coal Flora of Pennsylvania (Report P), range from No. 11074 to 11623.

Prof. E. W. Claypole's collection, made chiefly in Perry county, in 1882, 1883, catalogued under more than two hundred collecting "stations," ranges from No. 11624 to 12872. But a good many of these stations are in Juniata, Huntingdon, Northumberland, Montour and Columbia counties, the specimens being collected by Prof. I. C. White and sent to Prof. Claypole for determination, the specific names being used by Prof. White in writing his reports on those counties (G7, 1888, and T3, 1885). Prof. Claypole's specimens, so far as they were identified by him, were named in his report on Perry county (F2, 1884). The new species which he discovered or suspected still remain to be figured and described. The specimens will receive their museum numbers in the coming spring.

Mr. Charles E. Hall, while in charge of the Museum of the Survey, previous to 1880, when the second part of this Catalogue was printed, specially selected a suite of fossil specimens from all parts of the State, to show the order of life by formations. A summary of this suite was printed at the end of volume OO, pages 231 to 239. Nothing further was done with it, owing to the resignation of Mr. Hall and the exigencies of the Survey, the whole force of which had to be employed, year after year, in the direction of economic geology. This principal work of the Survey now approaching its end, by direction of the last Legislature, I procured the services of an accomplished palæontologist, Mr. George B. Simpson, working for

many years under the direction of the renowned geologist and palæontologist of the State of New York, Prof. James Hall, of Albany, to study, describe and, when necessary, figure Mr. C. E. Hall's special suite of fossils. The Catalogue made by Mr. Simpson and printed on pages 175–255 of this volume, is a detailed expansion of the short summary in OO, above mentioned.

The museum labels of this large collection do not run on consecutively after the last number 12872, but form a separate series; numbered (as in OO) according to formations, beginning in the Silurian and ascending to the Coal Measures. All marked 201, 202, 203, etc. to 213, being from the *Calciferous*, *Chazy* or *Trenton;* all marked 301, 302, &c. from *Utica* or Hudson River; 401, etc. from *Oneida* and *Medina;* 501, etc. *Clinton*, *Niagara*, *Salina;* 601, etc. *Lower Helderberg;* 701, etc. *Oriskany;* 801, etc. *Upper Helderberg*, *Marcellus*, *Hamilton*, *Genesee*, *Portage*, *Chemung*, and *Chemung-Catskill;* 901, etc. *Catskill;* 1000, etc. *Sub-carboniferous;* C 1, etc. *Coal measures*

The list is sub-divided under many heads, each head naming the collecting point, neighborhood or district.

The quality of each specimen is also given, whether plain or obscure. good, bad or indifferent, so that future students may have some direction in seeking specimens of a certain kind, especially for comparison.

Among the forms examined by Mr. Simpson some appeared to be new. About thirty, drawn and described by him, were accepted for publication in the Transactions of the American Philosophical Society, at its meeting of December 21, 1888, and will appear in my final report. They are thus named:

Orthis pennsylvanica,
Orthis subcircula.
Chonetes punctata,
Cyrtina triplicata,
Syringothyris angulata,
Syringothyris randalli,
Meristella incerta,
Rhynchonella (*Stenoschisma*) *lævis*,
Rhynchonella medialis,
Rhynchonella striata,

Aviculopecten æqualata,
Lyriopecten alternatus,
Leptodesma leiopteroides,
Leptodesma parallela,
Ptychopteria obsoleta,
Modiomorpha rigidula,
Modiolopsis subrhomboidalis,
Goniophora curvata,
Nucula sinuosa,
Nucula subtrigona,
Tellinomya (*Palæoneilo*) *cuneata*,
Tellinomya (*Palæoneilo*) *diminuens*,
Platyceras breve,
Platyceras dorsale,
Platyceras inequale,
Platyceras mitelliforme,
Platyceras striatum,
Platyceras varians,
Acervularia communis,
Cladopora rectilineata, and
Homalonotus trentonenis; the last mentioned being figured but not described.

I hope and believe that this special catalogue will be useful to a good many persons, and will richly repay the expense of making it.

The Survey has no museum in the popular sense of the term. No place for the display of the State Survey collections has yet been assigned or provided by the Legislature. They are at present boxed and stored away in the vaults of the Academy of Natural Sciences of Philadelphia; but in perfect order for an easy and rapid arrangement and exhibition on shelves, in drawers, or in cases, when and where the Legislature may see fit to provide museum room for them, wall space for illustrative maps and sections, and a curator or curators to work with them for the pleasure and profit of the public.

Respectfully submitted,

J. P. LESLEY,
State Geologist.

BERKS COUNTY COLLECTIONS.

By E. V. D'Invilliers.

1879-1882.

(*Reprinted from Report D3, Vol. II, pp. 375 to 393.*)

When topographical work was about finished, complete suites of varieties of *mountain gneiss*, *Oley valley limestone*, and *magnetic iron ore*, were collected for the museum and for analysis; also typical specimens of *Potsdam sandstone*, and of *Mesozoic shale*, *sandstone*, *conglomerate*, and *trap*, but no special collecting was done in the Great Valley.

The *museum numbers* run from 8975 to 9244. The *field numbers* are given in brackets.

8975 (1) Blue limestone, massive. Property and quarry of Samuel Marquart, 1 mile S. E. of Oley Line hotel, Oley township.

8976 (2) Bastard limestone, on farm of Samuel Kauffman, E. bank of Monocacy creek, ¼ mile S. from Oley Line hotel, Exeter township.

8977 (3) Fine-grained black trap (Basalt) from south end of same quarry.

8978 (4) Ditto—from S. end of same quarry.

8979 (5) Limestone, blue, with quartz veins, from ditto.

8980 (6) Ditto—soft blue N. end of same quarry.

8981 (7) Ditto—thinly bedded—S. end of John Snyder's quarry, 300 yards from Oley Line hotel, Exeter township.

8982 (8) Ditto—from N. end of same quarry.

8983 (9) Ditto—quartzose—on Oley and Exeter township line road, 200 yards S. from Oley Line hotel, property of John Snyder.

8984 (10) Light grey silicious limestone—from Oley and Exeter township line road, at school-house, Oley Line hotel.

8985 (11) Dark blue limestone—from center of Albert Knabb's quarry, ½ mile N. of Oley Line hotel. Exeter township.

8986 (12) Ditto—quartzose—from west end of same quarry.

8987 (13) Blue limestone—from quarry on west bank of Monocacy creek, 500 feet west of Oley Line hotel, Exeter township.

8988 (14) Blue and white crystalline limestone—back of Benjamin Ritter's barn, 1 mile N. E. of Jacksonwald, Exeter township.

8989 (15) Dark blue limestone—on Oley pike, Charles Breneiser's farm, 1¼ miles N. E. of Jacksonwald, Exeter township.

8990 (16) Blue limestone—from center of Benjamin Ritter's quarry, ¾ mile N. E. of Jacksonwald, Exeter township.

8991 (17) Blue limestone—quarry at kiln, farm of C. Tyson, ⅛ mile E. of Jacksonwald, Exeter township.

8992 (18) Hard blue limestone. E. end of Charles Dengler's quarry, 2½ miles west of Jacksonwald, Alsace township.

8993 (19) Blue limestone, from Oliver DeHart's quarry, 2 miles N. W. of Jacksonward, Exeter township.

8994 (20) Light grey bastard limestone. James Koch's farm, 2 miles west of Jacksonwald, Exeter township.

8995 (21) Dark blue compact limestone. Center of Samuel Schweitzer's quarry, west bank of Antietam creek, 2 miles west of Jacksonwald, Exeter township.

8996 (22) Soft blue limestone. E. bank of west branch of Lime Kiln creek, Samuel Marquart's farm, 1 m. S. E. of Oley Line hotel, Oley township.

8997 (23) Blue limestone, with iron pyrites. Levi Knabb's quarry, 1 mile east of Oley Line hotel, Oley township.

8998 (24) Slaty blue limestone, from Ephraim Knabb's farm 1 mile east of Oley Line hotel, Oley township.

8999 (25) Compact, grey limestone. George Raudenbusch's farm, from ditto.

9000 (26) Blue limestone. N. end of Ezra Griesermer's quarry, 1½ miles S. W. of Griesermersville, Oley township.

9001 (27) Blue limestone. Center of Levi Herbein's quarry, 1¾ miles S. W. Griesermersville, Oley township.

9002 (28) Cherty limestone. West end of ditto.

9003 (29) Calcareous slate. N. side of road, farm of D. C. Butz, from ditto.

9004 (30) Blue limestone, bedded. John G. Fischer's quarry, at kiln, 1 mile N. W. of Yellow House, Oley township.

9005 (31) Blue limestone. West end of Levi Hartmann's quarry, at kiln, 1½ miles S. E. of Friedensburg, Oley township.

9006 (32) Ditto. Center of quarry, at kiln, on farm of Peter Guldin estate, 1½ miles S. E. of Friedensburg, Oley township.

9007 (33) Ditto; in quarry at kiln, Samuel Houck's farm, 1½ miles S. E. of Friedensburg, Oley township.

9008 (34) Blue massive limestone. Seth Grim's quarry, 2 m. S. of Friedensburg, Oley township.

9009 (35) Ditto; from Mrs. Col. J. Weaver's quarry, 2 miles S. of Friedensburg, Oley township.

9010 (36) Blue granular limestone. N. end of quarry, of Simon P. Guldin's estate, ¼ mile N. W. Yellow House, Oley township.

9011 (37) Grey limestone. Outcrop on Friedensburg road, ½ mile N. W. Yellow House, Oley township.

9012 (38) Blue limestone, with quartz veins. On Friedensburg road, ¾ mile N. W. of Yellow House, Oley township.

9013 (39) Blue banded limestone. East of Daniel De Turk's quarry, ½ mile N. W. of Griesermersville, Oley township.

9014 (40) Blue limestone (brecciated). Center of Lewis De Turk's quarry, ¾ mile N. W. of ditto.

9015 (41) Soft blue limestone. W. end of Ellis Winter's quarry, 1½ miles N. W. of ditto.

9016 (42) Ditto. S. end of D. Kemmerer's quarry, near kiln, 1¼ miles N. E. of Oley Line hotel, Oley township.

9017 (43) Ditto; from center of quarry.

9018 (44) Hornblendic syenite, with small quartz veins, and large crystals of greenish, bronze-colored pyroxene.

From opening on summit of hill, property of D. Rauch, ½ mile north from Huff Church, Hereford township.

9019 (45) Coarse, cherty blue limestone. Center of Peter Sneider, Jr., quarry, ¼ mile N. E. of Oley Line hotel, Oley township.

9020 (46) Grey bedded limestone. Peter Sneider, Sr., quarry, 1 mile N. N. E. of Oley Line hotel, Oley township.

9021 (47) Soft blue limestone. N. end of ditto.

9022 (48) Grey argillaceous slate. Outcrop at roadside, Levi Merkel's farm, 1½ miles S. W. of Friedensburg, Oley township.

9023 (49) Ditto; from 1¼ miles S. W. of ditto.

9024 (50) Calcareous slate, quartz veins; at roadside, property of Levi Merkel, 1 mile S. of ditto.

9025 (51) Light blue silicious limestone. Center of F. V. Kauffman's quarry, on road from Friedensburg to Oley churches, 1¼ miles S. W. of Pleasantville, Oley township.

9026 (52) Soft blue limestone. Seth Grim's quarry, 2 miles S. of Friedensburg, Oley township.

9027 (53) Potsdam sandstone; from small quarry on crest Spies Church hill, 2 miles S. W. from Friedensburg, Alsace township.

9028 (54) Decomposed gneiss (granulite) E. bank of branch of Monocacy creek, property of John Hoch, 1¼ miles S. W. from Friedensburg, Oley township.

9029 (55) Granitic gneiss—from Capella hill—two miles west of Friedensburg, Alsace township.

9030 (56) Ditto—from hill summit, near Blind Hartman's tavern, 2½ miles W. of Friedensburg, Alsace township.

9031 (57) Brown hematite—bombshell, concretionary and botryoidal—Weaver's mine, 1 mile S. of Friedensburg, Oley township.

9032 (58) Kaolin—from Hunter's mine, Kemp farm, 1 mile S. of ditto.

9033 (59) Magnetic iron ore, in syenite, from old opening, on property of Mrs. David Knabb, ½ mile S. E. of Ohlinger dam, Alsace township.

9034 (60) Dark grey syenite, compact—hornblendic and altered feldspar, also pyroxene from Ohlinger dam road cut 3 miles N. E. of Reading, Alsace township.

9035 (61) Gneiss (granulite) with large crystals of quartz and pink feldspar—and some augite, from N. end of same cut.

9036 (62) Gneiss, consisting almost entirely of quartz and opaque orthoclase; also microline. The quartz contains numerous threadlike inclusions, possibly rutile, from N. end of same cut, immediately south of specimen No. 61.

9037 (63) Ditto—with more quartz and less orthoclase, middle of same cut.

9038 (64) Ditto—from S. end of same cut.

9039 (65) Fine-grained black trap, altered diabase, showing-ing augite and magnetic iron-ore grains. On road to Babb's tavern, ¼ mile south-west of Ohlinger dam, Alsace township.

9040 (66) Magnetic iron ore, loose, from mouth of old shaft on hill summit ½ mile E. of Koch tavern, Alsace township.

9041 (67) Potsdam sandstone (bluish quartzite) from railroad cut in Neversink Hills, 1½ miles S. of Reading depot, Alsace township.

9042 (68) Grey limestone, P. &. R. R. R. cut, Neversink Hills, 2 miles S. of depot, Alsace township.

9043 (69) Blue limestone—from quarry at Big dam, base of Neversink Hills, 3½ miles S. of depot, Exeter township.

9044 (70) Potsdam sandstone (brown) P. & R. R. R. cut, Neversink Hills, 1 mile S. of depot, Alsace.

9045 (71) Mesozoic conglomerate (Potomac marble) P. & R. R. R. cut, Neversink Hills, at Big dam, 3¾ miles S. of depot, Exeter township.

9046 (72) Coarse-grained trap (diorite) containing hornblende and feldspar, E. bank of Schuylkill river at canal rocks, at Little dam, 3 miles S. of Reading, Cumru township.

9047 (73) Syenite—fine-grained with hornblende and pyroxene, from cut on road to Babb's tavern, ¼ mile S. W. of Ohlinger dam, Alsace township.

9048 (74) Black syenite, showing large crystals of hornblende and pyroxene and some mica, distinctly stratified, from same locality.

9049 (75) Potsdam sandstone, white and fine-grained, Guldin Hill quarry, 1 mile N. W. of Jacksonwald, Exeter township.

9050 (76) Fine-grained black trap (diabase) showing augite, from dyke on road to Exeter station, property of Samuel Manwiller, 1½ miles S. of Jacksonwald, Exeter township.

9051 (77) Compact specular ? iron ore, semi-magnetic, loose, from old opening on Squire Samuel Hile's farm 1 mile N. E. of Clayton, Hereford, township.

9052 (78) Feldspathic syenite, "country rock" from mine on property of D. Cummener, 1 mile N. W. of Bechtelsville, Washington township.

9053 (79) Fine-grained, ferruginous gneiss, with minute crystals wine colored quartz, from same locality.

9054 (80) Fine-grained, grey syenite, "hanging rock," Landis mine, Barto station, Colebrookdale RR., Washington township.

9055 (81) Coarse hornblendic syenite, with crystals of iron pyrite, "foot rock" showing slickensides, from same locality.

9056 (82) Decomposed granite, nodules of pink feldspar, loose, at roadside ½ mile S. W. of Union hotel, Bechtelsvilie, Washington township.

9057 (83) Ditto.

9058 (84) Pink orthoclase feldspar gneiss with some little quartz, 1½ miles N. E. of Spangsville, Earl.

9059 (85) Rotten limestone, greatly decomposed, greenish grey, "top rock" upper Phœnix Slope, Boyertown, Colebrookdale township.

9060 (86) Altered syenite, carrying magnetic iron ore; feldspar greatly decomposed. "Foot wall" middle slope (No. 2) Phœnix mine, Boyertown, Colebrookdale township.

9061 (87) Rotten limestone, with coating of calcite. "Bottom rock" 1st level, ditto.

9062 (88) Impure limestone and calcite, "ore rock" lower level from ditto.

9063 (89) Chlorite rock, with grains of magnetic iron ore. "Foot wall" middle level, 143 ft. from shaft, Warwick mine, Boyertown, Colebrookdale township.

9064 (90) Magnetite with iron pyrites, in hornblendic syenite, from old opening on property of Andrew Schultz, ⅛ mile west of Treichlersville, Hereford township.

9065 (91) Micaceous gneiss, occurring on Emaus pike, just S. of Lehigh county line, ditto.

9066 (92) Grey magnesian limestone, from D. Benfield's quarry, at Hampton furnace, 2 miles E. S. E. of Siesholtsville, Hereford township.

9067 (93) Ditto; from James & Lewis Christman's quarry, ditto.

9068 (94) Chlorite rock, showing pyroxene, stilbite, and pyrite; from Colebrookdale RR. cut, below Wren's mill, Colebrookdale township.

9069 (95) Chlorite rock (greenstone) with pyroxene and olivine, from S. end of Colebrookdale RR. cut, above Wren's mill, ditto.

9070 (96) Ditto, with excess of feldspar. N. end of same cut, ditto.

9071 (97) Ditto, laminated and slightly decomposed. S. end of Colebrookdale RR. cut, above Mory's mill, from ditto.

9072 (98) Hornblendic syenite, showing large masses of pyroxene and slickensides. "Foot wall" Stouffer's mine, ½ mile N. of Bechtelsville, Washington township.

9073 (99) Ditto. N. end of cut above first trestling, S. W. of Gabel's mine, Colebrookdale township.

9074 (100) Bluish-gray chlorite rock, banded, from cut. just N. of Colebrookdale Station, Douglass township.

9075 (101) Syenite, with small crystals of pyroxene and feldspar. "Top rock" Gilbert's mine, 1½ miles N. of Bechtelsville, Washington township.

9076 (102) Indurated Mesozoic Sandstone, Colebrookdale RR. cut, opposite Colebrookdale Iron Works, Douglass township.

9077 (103) Ditto, hard and compact, from ditto.

9078 (104) Ditto. Side cut of Colebrookdale RR., about 700 ft. N. E. of same Iron Works.

9079 (105) Grey, compact, altered Mesozoic sandstone, just S. of dam of Colebrookdale Iron Works, in RR. cut.

9080 (106) Gneissic conglomerate, with small Potsdam quartzite pebbles, loose, S. slope of hill, ¼ mile W. of Eshbachville, Washington township.

9081 (107) Green stone, with nodules of feldspar and Zircon (?) crystals, from W. flank of Gabel hill, 1 mile S. W. of Boyertown, Colebrookdale township.

9082 (108) Indurated Mesozoic shale, greenish grey, from ditto.

9083 (109) Ditto. Near Weiman's mill, 1 mile S. of Greshville, Douglass township.

9084 (110) Pink, altered. Mesozoic sandstone, from road cut, near ditto.

9085 (111) Chlorite rock (greenstone) showing pyroxene and feldspar, between 1st and 2d levels Gabel mine, Boyertown, Colebrookdale township.

9086 (112) Magnetic iron ore, very hornblendic, from Oberholtzer's mine, 1 mile N. E. Dale Forge, Hereford township.

9087 (113) Grey talcose slate, J. M. Bertolet's quarry, on little Manatawny creek, 1¼ miles S. E. of Friedensburg, Oley township.

9088 (114) Soft buff-colored slate, from ditto.

9089 (115) Dark-grey slate, from over limestones in Oberholtzer's quarry, ⅛ mile N. E. of Bechtelsville, Washington township.

9090 (116) Iron ore, brown hematite, botryoidal, from Udreé bank, 1¼ miles S. W. of Pricetown, Ruscombmanor township.

Lepidocrocite and bombshell brown hematite, with coating of manganese oxide, from ditto.

9091 (117) Brown hematite — bombshell ore — from Israel Heist's property, ¼ mile W. of New Jerusalem, Rockland township.

9092 (118) Brown hematite, from J. Fischer's ore holes, 1 mile W. of Green Hill tavern, Rockland township.

9093 (119) Ditto, in altered Mesozoic shale, from small opening on property of H. Gilbert, 1 mile S. E. of Bechtelsville, Colebrookdale township.

9094 (120) Red hematite, from P. Brumbach's ore holes, ½ mile W. of Green Hill tavern, Rockland township.

9095 (121) Porous quartzose, gneiss, with peacock coloring due to ferric oxide, from Oberholtzer's mine, 1 mile N. E. of Dale Forge, Hereford township.

9096 (122) White Potsdam SS., "Silver Sand Rock," from summit of Sand Hill, 2 miles W. of Boyertown, Earl township.

9097 (123) Ditto, from quarry of J. Rhoades, on Reading road, ½ mile E. of Earlville, Earl township.

9098 (124) Potsdam quartzite, W. bank of Manatawny creek, property of D. Davidheiser, ¾ mile N. W. of Earlville, Earl township.

9099 (125) Reddish brown Potsdam quartzite, boulder, loose, at New Jerusalem, Rockland township.

9100 (126) Potsdam quartzite, coarse, from Shenkel's Hill, 1½ miles N. E. of Spangsville, Earl township.

9101 (127) Red and white Potsdam quartzite, coarse, Mengle Hill, 2 miles N. E. of Earlville, Earl township.

9102 (128) Purple quartzose conglomerate (Potsdam SS.), from crest of Furnace Hill, 1½ miles S. E. of Pricetown, Ruscombmanor township.

9103 (129) Potsdam SS.? gneissic conglomerate, loose, 1 mile N. E. of Shanesville, Pike township.

9104 (130) Soft white Potsdam SS., vitreous, from pit on crest of Furnace Hill, 1½ miles S. E. of Pricetown, Ruscombmanor township.

9105 (131) Fine white sand, derived from specimen 130, ditto.

9106 (132) Coarse brown sand, from ditto.
9107 (133) Purple quartzose conglomerate (Potsdam SS.), with nodules of pink feldspar and quartz crystals, from summit of Furnace Hill, near Oley Furnace, 1½ miles S. E. of Pricetown, Ruscombmanor township.
9108 (134) Blue magnesian limestone, D. Davidheiser's quarry, W. bank of Manatawny creek, ¾ mile N. of Earlville, Earl township.
9109 (135) Ditto, from W. bank of Manatawny creek, properties of M. Mengle and N. Gross, ½ mile N. of Earlville, Earl township.
9110 (136) Ditto, from F. Boyer's quarries, on Manatawny creek, 500 yards W. of ditto.
9111 (137) Ditto, with quartz veins, from F. Boyer's estate, upper quarry, ditto.
9112 (138) Ditto, from middle quarry.
9113 (139) Soft blue magnesian limestone, from M. Mengle's quarry, E. side of Manatawny creek, ½ mile N. of Earlville, Earl township.
9114 (140) Soft blue and grey limestone, D. M. Schollenberger's quarry, ½ mile N. of Pleasantville, Oley township.
9115 (141) Dark blue silicious limestone, with quartz veins, Wm. Y. Weidner's quarry, 1 mile S. of Lobachsville, Oley township.
9116 (142) Soft grey limestone, from ditto.
9117 (143) Blue magnesian limestone, from D. Davidheiser's quarry, ¾ mile N. of Earlville, Earl township.
9118 (144) Grey magnesian limestone, Davidheiser's quarry, ¼ mile S. W. of Greshville, Douglass township.
9119 (145) Grey limestone, very silicious, from H. Geist's quarry, ½ mile S. W. of Bechtelsville, Washington township.
9120 (146) Hard blue limestone, Davidheiser's quarry, ¼ mile S. W. of Greshville, Douglass township.
9121 (147) Grey cherty limestone, E. end of Oberholtzer's quarry, ⅛ mile N. E. of Bechtelsville, Washington township.
9122 (148) Hard blue limestone, from S. end of ditto.

9123 (149) Blue quartzose limestone, with nodules of feldspar, from H. Geist's quarry, ¼ mile S. W. of Bechtelsville, Washington township.

9124 (150) Blue limestone, from Levi Gresh's quarry, ¼ mile N. E. of Greshville, Douglass township.

9125 (151) Blue limestone, from Davidheiser's quarry, ¾ mile S. W. of Greshville, Douglass township.

9126 (152) Dark blue magnesian limestone, Henry Keely's quarry, ⅜ mile S. W. of Greshville, Douglass township.

9127 (153) Grey limestone, N. end of Oberholtzer's quarry, ⅛ mile N. E. of Bechtelsville, Washington township.

9128 (154) Blue and grey limestone, from bottom and E. end of ditto.

9129 (155) Granular limestone, with pyroxene and garnets? loose from hill 1 mile N. of Bechtelsville, Washington township.

9130 (156) Blue limestone, quarry of D. F. Bertolet, 1½ miles W. of Pleasantville, on Little Manatawny creek, Oley township.

9131 (157) Ditto—I. Kauffman's quarry, 1½ miles N. of Griesermersville, Oley township.

9132 (158) Ditto—from E. Levan's quarry, (Deisher's quarry) 2 miles E. of Friedensburg, Oley township.

9133 (159) Blue limestone, J. G. Bertolet's quarry, Little Manatawny creek, 1½ miles S. E. of Friedensburg, Oley township.

9134 (160) Soft blue limestone, E. Wilman's quarry, ½ mile N. W. of Pleasantville, Oley township.

9135 (161) Soft dark blue limestone, E. end of D. Yoder's quarry, ½ mile N. E. of ditto.

9136 (162) Ditto—centre of D. Kemmerer's quarry, at kiln, 2 miles S. of Friedensburg, Oley township.

9137 (163) Blue and grey massive limestone, E. Wilman's quarry, ½ mile N. W. of Pleasantville, Oley township.

9138 (164) Blue limestone, N. end of D. Yoder's quarry, ½ mile N. E. of ditto.

9139 (165) Ditto—with calcite, W. end of same quarry.

9140 (166) Dark blue impure limestone, occurring between beds of magnetic iron-ore, Gabel mine, Boyertown, Colebrookdale township.

9141 (167) Greenish grey bastard limestone, with calcite and feldspar, Warwick shaft, Boyertown, ditto.

9142 (168) Ditto—occurring between ore and foot wall, from upper slope No. 1, Phœnix mine, Boyertown.

9143 (169) Impure slaty limestone, with iron pyrite, "top rock," ditto.

9144 (170) Impure greenish grey limestone, above first level, Gabel mine, ditto.

9145 (171) Calcite, accompanying ore, Warwick mine, ditto.

9146 (172) Graphite—in quartz and decomposed white feldspar, near house of J. Bechtel, 1 mile W. of Boyertown, ditto.

9147 (173) Cores of Mesozoic conglomerate, from boring of Diamond Drill Co., Warwick shaft, Boyertown, ditto.

9148 (174) Graphite in micaceous gneiss, decomposed, near house of J. Bechtel, 1 mile W. of Boyertown, ditto.

9149 (175) Graphitic gneiss—Dr. Funk's fish-pond ½ mile west of Boyertown, ditto.

9150 (176) Graphite in quartz and micaceous gneiss, near house of J. Bechtel, 1 mile W. of Boyertown, ditto.

9151 (177) Mesozoic conglomerate—from Manatawny creek, 1 mile S. E. of Earlville, Amity township.

9152 (178) Ditto—top covering, Warwick mine, Boyertown.

9153 (179) Greyish blue Potsdam SS. partly decomposed, from hill N. of Reading road, 1 mile S. W. of Greshville, Douglass township.

9154 (180) Compact white Potsdam SS. loose, on summit of hill ¼ mile W. of Eshbachville, Washington township.

9155 (181) Potsdam SS. with highly decomposed feldspar, exposing pink and colorless quartz crystals, from W. end of F. Stauffer's quarry, on small hill, N. of Mt. Pleasant Seminary, Boyertown, Colebrookdale township.

9156 (182) Ditto; from 2d quarry further east, ditto.

9157 (183) Feldspathic clay, resulting from decomposition of above, from cellar Mt. Pleasant Seminary, Boyertown, ditto.

9158 (184) Potsdam SS. with coarse quartz crystals, from F. Stauffer's west quarry, ditto.

9159 (185) Ditto; brown, partially decomposed, from John W. Rhoades' quarry, ¾ mile E. of Earlville, Amity township.

9160 (186) Potsdam quartzite, pink quartz crystals, from outcrop on hill 1 mile S. W. Hill Church, Earl township

9161 (187) Potsdam SS. dull white, vitreous, Naugle's hill, 1½ miles N. E. of Earlville, Earl township.

9162 (188) Ditto, bluish grey, compact, from Powder Mill valley, 1½ miles N. E. of ditto.

9163 (189) Ditto, 300 ft. S. W. from specimen 188, ditto.

9164 (190) Ditto, from ridge of Mengle's hill, 2 miles N. E. of ditto.

9165 (191) Potsdam quartzite, with *Scolithus* borings, from summit of hill ¼ mile west of Eshbachville, Washington township.

9166 (192) Magnetic iron ore, ("Black ore") with iron pyrites, top level Warwick mine, Boyertown, Colebrookdale township.

9167 (193) Ditto, (black ore) lower level, at shaft, ditto.

9168 (194) Magnetic iron ore, interstratified with impure limestone, and showing clusters of iron pyrites, Gabel mine, ditto.

9169 (195) Ditto, (black ore) from upper slope No. 1, Phœnix mine, Boyertown, ditto.

9170 (196) Ditto, (black ore) with limestone and iron pyrites, S. of shaft upper level, Warwick mine, ditto.

9171 (197) Ditto, (black ore) with incrustation of calcite and iron pyrites, Warwick mine, ditto.

9172 (198) Magnetic iron ore (black ore), middle level, showing calcite and iron pyrites, "Warwick Trespass," Gabel mine, ditto.

9173 (199) Ditto, No. 1 black ore, crystallized, Warwick mine, ditto.

9174 (200) Magnetic iron ore, in limestone, Phœnix middle slope, Boyertown, ditto.

9175 (201) Magnetic iron ("blue ore"), lean, Gabel mine, Boyertown, ditto.

9176 (202) Ditto (black ore), lean, showing calcite and iron pyrites, from 567' lower level, Warwick mine, ditto.

9177 (203) No. 1 black magnetic iron ore, Phœnix upper slope, Boyertown, ditto.

9178 (204) Magnetic iron ore, face of gangway 300 ft. north of slope, Phœnix middle slope, ditto.

9179 (205) Ditto, with pyrite and coating of calcite, from slip, middle slope, Phœnix mine, ditto.

9180 (206) Ditto, 2d bench (blue ore) showing iron pyrites, Gabel mine, Boyertown, ditto.

9181 (207) Ditto (black ore mixed with calcite), from underneath Mesozoic conglomerate, ditto.

9182 (208) Magnetic iron ore (blue ore) from 2d (464') level, Gabel mine, Boyertown, ditto.

9183 (209) Ditto, hard, close-grained and black, with little iron pyrites, from 216' level, Landis mine, Barto Station, Washington township.

9184 (210) Crystallized black magnetic iron ore, open structure, lump ore, from Clymer & Co.'s open cut on S. flank of Furnace hill, 1½ miles S. E. of Pricetown, Ruscombmanor township.

9185 (211) Magnetic iron ore, tough, black, titaniferous, and with wine-colored crystals of zircon, loose, on dump of Schittler's mine, 1½ miles east of Pricetown, Ruscombmanor township.

9186 (212) Ditto, from same mine.

9187 (213) Fine ore, manganiferous, from same mine as specimen No. 210.

9188 (214) Magnetic iron ore, very hornblendic, from Oberholtzer's shaft, ½ mile N. E. of Hill church, Pike township.

9189 (215) Ditto, tough, with large crystals of feldspar, from Gilbert's mine, 2 miles N. from Bechtelsville, Washington township.

9190 (216) Soft ore, semi-hematite, from over magetic iron ore, in Bittenbender's shaft, ½ mile N. E. from Siesholtzville, Hereford township.

9191 (217) Magnetic iron ore, greyish blue, largely mixed with limestone and feldspar, "Hard Ore," from bottom of same shaft, ditto.

9192 (218) Ditto, in decomposed gneiss, loose, in George Rohrbach's field, Huff's church, Hereford township.

9193 (219) Magnetic iron ore (soft ore), with considerable mica, from Hertzell's & Swoyer mine, 1¼ miles N. E. of Friedensburg, Oley township.

9194 (220) Specular iron ore, with stalacititic crystallization, old opening of Kaufman & Spang, at base of Furnace Hill, 1¼ miles E. of Spangsville, Earl township.

9195 (221) Potsdam SS., from quarry at "White Spot," on crest of Mt. Penn, 1 mile east of Reading depot Alsace township.

9196 (222) Light blue compact magnesian limestone, from Jacob Christman's quarry, near Hampton Furnace, Hereford township.

9197 (223) Grey magnesian limestone, Jonas Shaub's quarry, ditto.

9198 (224) Light grey and pink gneiss, "foot wall," Tunnel mine, Rittenhouse Gap, Longswamp township.

9199 (225) Quartzose feldspathic gneiss, "hanging rock," ditto.

9200 (226) Black micaceous gneiss, from immediately under ore, ditto.

9201 (227) Magnetic iron ore, in gangue of white feldspar, frequently found as a "horse" in foot wall of syenite, Tunnel mine, Rittenhouse Gap, Longswamp township.

9202 (228) Green decomposed slate rock, from dyke in Tunnel mine, ditto.

9203 (229) Stratified, granitoid gneiss, with scales of black mica, Thomas Iron Co. open cut, Rittenhouse Gap, ditto.

9204 (230) Blue limestone, J. Rush's quarry, ½ mile N. W. of Dale Forge, Hereford township.

9205 (231) Banded gneiss, blue coating of silicate of alumina and magnesia, colored with iron (FeO), loose, on road near J. Dotterer's house, ½ mile E. of Hill Church, Pike township.

9206 (232) Conglomeritic rock, (Potsdam SS.?) with large quartz nodules, from summit of small hill, S. of J. Hess' house, 1 mile N. W. of Hill Church, Pike township.

9207 (233) Magnetic iron ore, from same place as specimen No. 215.

9208 (234) Ditto, same character as No. 233, from Gilberg's mine, property of E. Nestor, 1½ miles N. W. of Barto, Washington township.

9209 (235) Ditto, in hornblendic (pyroxene?) syenite, from Sparr's mine, 2 miles N. W. of Churchville, Washington township.

9210 (236) Trap, with hornblende and felsite, decomposed, from outcrop on hill S. E. from Bechtelsville 1 mile, near Stauffer's saw mill, Washington township.

9211 (237) Specular iron ore? (argillaceous Potsdam slates impregnated with iron) from Dotterer's "Red Oxide" mine, on crest of Saw Mill Hill, 1 mile E. of Pleasantville, Earl township.

9212 (238) Quartz conglomerate (Potsdam?), showing large pink quartz crystals, from ditto.

9213 (239) Blue limestone, from J. Keim's quarry, at foot of Angstadt hill, 1 mile west of Lobachsville, Oley township.

9214 (240) Ditto—from same hill, Keim's No. 2 quarry.

9215 (241) Dark greenish black slate, loose, from ore hole on Clymer & Co. property, overlying soft magnetic iron ore, 1½ miles S. E. of Pricetown, Ruscombmanor township.

9216 (242) Magnetic iron ore (lump) highly charged with mica and slate, from same place as specimen 241.

9217 (243) Blue limestone and calcite, from Peter Rapp's quarry, 200 yards S. of Reading road and 2 miles E. of Earlville, Amity township.

9218 (244) Pyroxenic chlorite rock, with blue coating of silicate of alumina and magnesia, from cross cut near Warwick trespass 460′ level, Gable mine, Boyertown, Colebrookdale township.

9219 (245) Chlorite rock, showing pyroxene, foot wall at shaft, below blue ore bed, Gabel mine, ditto.

9220 (246) Blue limestone, massive, from N. Fryermuth's quarry, 2 miles E. of Earlville, Amity township.

9221 (247) Decomposed feldspathic rock, with quartz crystals and serpentine, from N. bank of Manatawny creek, 500 yards S. W. of Earlville, ditto.

9222 (248) Blue and white limestone, from M. Diehl's quarry, ¼ mile S. W. of Clayton, Washington township.

9223 (249) Grey and white limestone from A. G. Clemmer's quarry, ¼ mile N. E. of Clayton, Hereford township.

9224 (250) Red hematite (specular ore) Shimersville mine, ⅛ mile N. E. from Shimersville, *Lehigh Co.*

9225 (251) Blue limestone, D. H. Schall's quarry, S. of dam at Dale Forge, Washington township.

9226 (252) White limestone, D. H. Schall's quarry, 300 yards N. of Dale Forge P. O., Hereford township.

9227 (253) Magnetic iron-ore, Barto mine, at Barto station, Washington township.

9228 (254) Mesozoic conglomerate (calcareous) hanging rock No. 1 slope, Fritz Island mine, 2 miles S. of Reading, Cumru township.

9229 (255) Mesozoic conglomerate, from hill summit 1 mile S. E. from Shultzville, Washington township.

9230 (256) Trap rock (dolerite) dividing ore in No. 1 and 2 slopes, Fritz Island mine, 2 miles S. of Reading, Cumru township.

9231 (257) Magnetic iron ore, in gneiss, Thomas Iron Co.'s open cut, Rittenhouse property, Longswamp township.

9232 (258) No 1 magnetic iron ore, from No. 1 slope, Fritz Island mine, 2 miles S. of Reading, Cumru township.

9233 (258) Average magnetic iron ore, showing calcite, from same locality.

9234 (260) Muscovite mica, loose on road at east base of Shenkel's hill, Earl township, 1 mile N. E. Spangsville.

9235 (261) Green muscovite mica, loose at dump, Clymer magnetic ore mine, 1½ mile S. E. Pricetown, Ruscombmanor township.

9236 (262) Green mica, Kemp farm, ½ mile south Huff church, Hereford township.

9237 (263) Drusy quartz colored with ferric oxide, and jasper, from Flint hill, Rockland township, 1 mile south Bower's Station.

9238 (264) Green serpentine, carrying magnetite and pyrite, Island mine, 1½ miles south Reading.

9239 (265) Magnetic with coating of hematite, "Hagy vein," Lower Phœnix slope, Boyertown.

9240 (266) Chabazite, Island mine, 1½ miles south Reading.

9241 (267) Pink serpentine, ditto.

9242 (268) Pink calcite, Leinbach's hill, 1½ miles west Reading.

9243 (269) Bornite, chalcopyrite, and pink calcite, on altered New Red shale, Island mine.

9244 (270) Serpentine, dendrites, and datholite, ditto.

GLACIAL DRIFT COLLECTIONS.

By Henry Carvill Lewis.

1881, 1882.

(*To accompany Report Z., 1884.*)

9245 Large glaciated sandstone boulder, in till, at Bangor, Mt. Bethel Twp., Northampton Co., Z, p. 59, figured in plate V, (placed at foot of staircase in Acad. Nat. Sci.)

9246 Boulder of Hamilton SS., from moraine, 1½ miles S. W. of Fox Gap, top of Kittatinny mountain, Northampton Co., Z, p. 69.

9247 Boulder of Helderberg limestone, ditto.

9248 Boulder of Oriskany SS., ditto.

9249 Boulder of Helderberg chert, ditto.

9250 Boulder of Helderberg black limestone, ditto.

9251 Boulder of Medina SS., Wind Gap, Northampton Co., Z, p. 59.

9252 Boulders of Oneida conglomerate, 5′ long, 2 miles S. E. of
9253 Centreville, Northampton Co., Z, p. 59.

9254 Large fossiliferous Upper Helderberg limestone boulder,
9255 30′ long, Upper Mt. Bethel Twp. (near house of S. G.
9256 Labor), 1½ miles west of Slateford, Z, p. 60.

9257 "Creep striæ" on roofing slate, Bangor, Northampton
9258 Co., Z, p. 61. 9259 9260 Ditto.

9261 Glaciated boulder in moraine, 2½ miles south of Sox-
9262 ville, Pocono mountain, 1825′ A. T., Tunkahannock township, Monroe Co., Z, p. 69.

9263 Striated boulder, top of Kittatinny mountain, Delaware Water Gap, Monroe Co., Z, p. 69.

9264 Boulder of Laurentian gneiss (from the Adirondack mountains) in moraine, Saylorsburg, p. 70.

9265 Boulder of fossiliferous Upper Helderberg limestone, 6'
9266 in length, 1200 A. T. top of Kittatinny mountain, Del-
9267 aware Water Gap, Monroe Co., Z, p. 88.
9268 Striated SS. boulder, from moraine Deep Lake, Pocono Knob, 2020' A. T., Jackson Twp., Monroe Co., Z, p. 75.
9269 Striated boulder from top Nescopec mountain, Luzerne Co., Z, p. 104.
9270 Striated boulder of Pocono SS., south side of Pocono Knob, Monroe Co., Z, p. 75.
9271 Boulder of Adirondack gneiss, 2' long, 3 miles N. W. of Tannersville, corner of Pocono and Jackson Twps., Pocono mountain, 1620' A. T.. Monroe Co., Z, p. 75.
9272 Boulder of Labradorite rock 4'×3'×3' (from Adiron-
9273 dacks) at moraine on McMichael's creek, 900' A. T., 2 miles east of Effort P. O., Chestnut Hill Twp., p. 88.
9274 Boulder of Adirondack gneiss, moraine Lake Popono-
9275 ming, Saylorsburg, Monroe Co., Z, p. 70.
9276 Boulder of Adirondack gneiss. in moraine, 3½ miles N.W. of Tannersville, near boundary of Pocono and Jackson Twps., 1810' A. T., Monroe Co., Z, p. 75.
9277 Boulder of Adirondack garnetiferous gabbro or granite, ⅛ of a mile south of Forks station, 1550' A. T., Tobyhanna Twp., Monroe Co., Z, p. 88.
9278 Glaciated boulder from moraine on south side of Pocono mountain, 1450' A. T., Monroe Co., Z, p. 74.
9279 Creep striæ on Catskill red shale, Hickory run, Carbon
9280 Co , Z, p. 96, Fig. V, page pl. II, p. 32.
9281 Glaciated boulder, Hickory run, Carbon Co , Z, p. 96.
9282 Striated boulder from moraine, near Tobyhanna creek, Carbon Co., Z, p. 93.
9283 Creep striæ crossing glacial striæ on Catskill SS. Hick-
9284 ory Run, Carbon Co., Z, p. 96. 9285 ditto.
9286 Boulder of Pottsville conglomerate (XII), measuring 9'×6'×4½', top of Penobscot Knob, 2088' A. T., Luzerne Co., Z, p. 106, plate XVI.
9287 Striated boulder from moraine, Beech Haven, p. 105.
9288 Striated SS. boulder from moraine, Salem twp., Luzerne Co., Z, p. 104.
9289. Glaciated boulder in moraine, Salem Twp.

9290 Glaciated boulder from moraine, Foster Twp., Luzerne Co., Z, p. 103.

9291 Boulder of limestone 7½' long, ½ mile east of Morrison
9292 P. O., Luzerne Co., Z, p. 103. 9293 ditto.

9294 Striated fragment of Hamilton flags in front of moraine, near bridge at Coles Mills (Waterville), Columbia Co., Z, p. 122. Plate XVII.

9295 Glaciated boulder from moraine base of Huntingdon mountain near Jonestown, Columbia Co., Z, p. 118.

9296 Striated (Glacial?) boulders, crest of Lee's mountain,
9297 Centre township, p. 116. 9298 ditto.

9299 Striated boulder, (in "fringe") 1 mile east of the Susquehanna river, on road from Martinsville to Hughsville, 150' above the river, Muncy township, Lycoming Co., Z, p. 136.

9300 Glacial boulder in moraine 1400' A. T., 2 miles N. W. of Warrenville, N. W. cor. Eldred Twp., p. 131.

9301 Glaciated boulder from moraine, Cascade Twp., p. 132.

9302 Glaciated boulder from moraine, Shoemaker Run, Lewis Twp., Lycoming Co., Z, p. 132.

9303 Striated boulder (in "fringe"?) on hill east of Tiles Run, 180' above the Susquehanna river, 3½ miles east of Montoursville. 5 miles S. of moraine, Z, p. 136.

9304 Glaciated boulder from moraine, Cascade Twp., Lycoming Co., Z, p. 132.

9305 Striated boulder (in "fringe"?) on hill east of Tiles Run, 180' above the Susquehanna river, 3½ miles east of Montoursville, 5 south of the moraine, p. 136.

9306 Striated boulder (in "fringe"?) 1 mile east of the Sus-
9307 quehanna river, on road from Martinsville to Hughesville, 150' above the river, Muncy Twp., p. 136.

9308 Glaciated SS. boulder from moraine on Eleven Mile Creek, 3 miles N. E. of Millport, Oswayo Twp., Potter Co., Z, p. 144.

9309 Glaciated boulder from moraine, 1 mile north of Raymond Corners, 2580' A. T., (highest point of moraine in Pennsylvania) Potter Co., Z, p. 142.

9310 Red Granite boulder, ditto. ditto.

9311 Calamite in moraine near Genesee Forks, Pike Twp., Potter Co., Z,p. 142.

9312 Glaciated SS. boulder, ditto. ditto.
9313 Boulder of gneiss from moraine 3 miles north of Colesburg, 2375′ A. T., Allegheny Twp., Potter Co., p. 143.
9314 Boulder of gneiss from moraine, junction of Honeoye and Butler Creeks, near Goldsmith's corners, Sharon Twp., Potter Co., Z, p. 144.
9315 Striated SS. boulder from moraine on Eleven Mile Creek,
9316 Oswayo Twp., Potter Co., Z, p. 144. 9317 ditto.
9318 Striated boulder of Chemung SS. in moraine at 2100′ A.
9319 T. S. W. cor. of Humphrey Twp., Cattaraugus Co.,
9320 N. Y., Z, p. 154.
9321 Pebble of granite, ditto.
9322 Striated boulder of Chemung SS., ditto. 9323 Ditto.
9324 Large boulder of gray labradorite syenite 15′×8′×8′ in
9325 moraine, in Mutton Hollow, 2 miles N. W. of Great Valley P. O., 1750′ A. T.± Z, p. 155.
9326 Glaciated SS. boulder from moraine, 2150′ A. T.
9327 Wright's creek near Little Valley, Catt. Co., N. Y., 156.
9328 Finely striated boulder of fossiliferous Chemung SS. Mouth of Eight Mile river, 2 miles west of Allegany, Cattaraugus Co., N. Y., Z, p. 153.
9329 Drift conglomerate cemented by lime, near Steamburg, Catt. Co., N. Y., Z, p. 159.
9330 Boulder of granite, Little Valley, near Rock City, about 2100′ A. T., Z, p. 156.
9331 Boulder of diabase? 4′×3′ near Rock City, Newton's Run, 2½ miles from Salamanca, 2010′ A. T., Z, p. 157.
9332 Partially waterworn glaciated pebble in stratified drift immediately below the moraine dam, 1 mile south of Peth, Catt. Co., N. Y., Z, p. 155.
9333 Boulder of compact gneiss? (altered volcanic ash?) 3′ long, summit of hill 6 miles west of Onoville, in moraine, 2000′ A. T., Carroll Twp., Chatauqua Co., N. Y., Z, p. 163.
9334 Finely striated boulder of fossiliferous Chemung SS. in moraine, 3½ miles south of Randolph, 2040′ A. T., Randolph Twp., Catt. Co., N. Y., Z. p. 161.
9335 Striated boulder of fossiliferous Chemung SS. in moraine,
9336 ½ mile south of Peth, 1500′ A. T., Catt. Co., N. Y., Z,
9337 p. 155. 9338 Ditto.

9339 Striated boulder of Chemung SS. in moraine dam on Spring creek, on the State road, 1½ miles S. W. of the crossing of Big Brokenstraw creek, near West Spring Creek P. O., Spring Creek Twp., Warren Co., p. 172.

9340 Striated boulder of porphyritic greenstone? in moraine, 1½ miles south of Farmington Center, Farmington Twp., Warren Co., Z, p. 169.

9341 Striated boulder of Chemung SS., Chandler's Valley, S. E. of Sugar Grove, 1800' A. T., Sugar Grove Twp., Warren Co., Z, p. 170.

9342 Boulder of coarse granite, ditto.

9343 Striated sandstone boulder, Sugar Grove Twp., Warren Co., Z, p. 169.

9344 Partially waterworn glacial pebbles in stratified gravel
9345 on Conewango river above Russellburg, 1 mile south of the moraine, Pine Grove Twp., Warren Co. p. 168.

9346 Boulder of granite, moraine, Rome Twp., Crawford Co., Z, p. 175.

9347 Boulder of gneissoid hornblende granite in moraine, 1950' A. T., "Pike's Ridge," 3 miles S. W. of Sugar Grove P. O., Sugar Grove Twp., Warren Co., Z, p. 170.

9348 Striated SS., ditto.

9349 Striated boulder of SS., Warren Co., Z, p. 169.

9350 Striated boulder of Chemung SS., 1900' A. T., Columbus Twp., Warren Co., Z, p. 172.

9351 Other half of 9350.

9352 Boulder of gneiss in moraine, Troy Twp., Crawford Co., Z, p. 176.

9353 Boulder of hornblendic granite, ditto.

9354 Boulder of granulite, ditto.

9355 Boulder of labradorite syenite, 8' × 6', in moraine 1700'
9356 A. T. N. E. Corner of Troy Twp. Crawford Co. p. 176.

9357 Glaciated SS. boulder near Centreville, Rome Twp., Crawford Co., Z. p. 175.

9358 Striated SS. boulder in moraine, Rome Twp., Crawford Co., Z. p. 176.

9359 Striated SS. boulder, ditto. ditto.

9360 Striated SS. boulder (in "fringe") from near Franklin, Sugar creek Twp., Venango Co., Z. p. 180.

9361 Striated SS. boulder from "fringe" 2 miles in front of
9362 the moraine, Irwin Twp., Venango Co., Z. p. 181. 9363
9364 Striated boulder from "fringe," 1100' A. T., near Franklin, Sugar creek Twp., Venango Co., Z. p. 180.
9365 Glaciated SS. boulder from moraine 1300' A. T., ½ mile N. W. of Centreville, Butler Co., Z. p. 184.
9366 Boulder of diabase? ditto. ditto.
9367 Granite boulder from moraine, West Middlesex, Shenango Twp., Mercer Co., Z. p. 190.
9368 Striated SS. boulder from lower till in "Lenticular Hill,"
9369 950' A. T., near Sharpsville, p. 188. 9370 ditto.
9371 Discarded.
9372 Striated SS. boulder from moraine, Big Beaver Twp., Lawrence Co, Z. p. 195.
9373 Boulder of granite, ditto. ditto.
9374 Boulder of greenstone? 9375 9376 ditto.
9377 Glaciated SS. boulder from moraine, 1350' A. T., Shenango twp., Lawrence Co., Z. p. 194,
9378 Boulder of labradorite rock from moraine, 1200' A. T.,
9379 on Slippery Rock creek, 1 mile above Kennedy's lower
9380 mill, Slippery Rock Twp., Lawrence Co., Z. p. 193.
9381 Glaciated SS. boulder from moraine, 1350' A. T., Shenango Twp., Lawrence Co., Z. p. 194.
9382 Glaciated SS. boulder from moraine, Darlington Twp., Beaver Co., Z. p. 198.
9383 Boulder of porphyrite with granite inclusion (not "Staurolite schist") from modified drift near New Galilee, Darlington Twp., Beaver Co., Z. p. 200.
9384 Glaciated SS. boulder from moraine, Darlington Twp., Beaver Co., Z p. 198.
9385 Boulder of red granite from moraine, Darlington Twp., Beaver Co., Z. p. 200.
9386 Boulder of quartzite from moraine, Big Beaver Twp., Beaver Co., Z. p. 199.
9387 Boulder of syenite, ditto. ditto.
9388 Boulder of red granite, ditto. ditto.
9389 Boulder of gneissic granite, ditto. ditto.
9390 Glaciated SS. boulder, ditto. ditto.
9391 Boulder of red syenite, ditto. ditto.

WARREN COUNTY COLLECTIONS.

By F. A. Randall.

Before 1882.

(*To illustrate Report IIII. 1883.*)

These fossils have been classified by Mr. Randall, and grouped in accordance with the divisions of his generalized section, published in I,4 page 304, &c., which see.

A.—Summit Rocks, Form. XII.

9392 Grey SS., Lepidodendron? 2½ miles S of Warren.
9393 Ditto. ditto. ditto.
9394 Yellow SS. Sigillaria, ditto.
9395 Ditto. ditto. ditto.
9396 Angular conglomerate, ditto.

B & C.—Sharon Shale horizon, in XII.

8397 Thin SS., Fucoid, 2½ miles S. of Warren.
9398 Ditto Rhynchonella, ditto.
9399 Ditto Fucoids, ditto.
9400 Yellow SS., Ctenacanthus spine, ditto.
9401 Iron ore, over thin coal, 3 miles S of Warren.
9402 Yellow SS., Sigillaria? 2½ miles S. of Warren.
9403 Ditto Lepidodendron, ditto.
9404 Dark slate, over coal, Quaker Hill coal bed, 8 miles E. of Warren.
9405 Dark slate, fern, ditto. ditto.
9406 Grey SS, Ctenacanthus spine, 2 miles S. of Warren.
9407 Ditto. fish bone, ditto.

D & E.—Olean Conglomerate, Form. XII.

9408 Buff SS., Lepidodendron, 2 miles S. of Warren.
0409 Yellow SS., ditto. ditto.
9410 Ditto. ditto. ditto.

9411 Buff SS., Lepidodendron, 9 miles S. W. of Warren.
9412 Grey SS., ditto. 8 miles N. E. of Warren.
9413 Ditto. ditto. ditto.
9414 Orange SS., Sigillaria, 2 miles S. of Warren.
9415 Yellow grey SS., Calamite, ditto.
9416 Grey SS., Stigmaria, 9 miles S. W. of Warren.
9417 Ditto. ditto. ditto.
9418 Pebbly SS., Ctenacanthus spine, 3 miles N. E. of Warren.

F.—Shenango Shale horizon, Form. XI.

G.—Sub-Olean Conglomerate, Form. X.

9419 Grey SS., sigillaria, 3 miles S. of Warren.
9420 Ditto. ditto. ditto.
9421 to 9425. Orthoceras, 3 miles N. W. of Warren.
9426 Grey SS., Nautilus, ditto.
9427 Yellow SS., ditto. ditto.
9428 Ditto. ditto. ditto.
9429 Ditto. ditto. ditto.
9430 Ditto. ditto. ditto.
9431 Grey SS., a fish spine, 2 miles S. of Warren.
9432 Yellow shaly SS., Crinoid, 3 miles N. W. of Warren.
to Ditto. ditto. ditto.
9446 Ditto. ditto. ditto.
9447 Ditto. ditto. ditto. (box, 17 pieces.)
9448 Ditto. a radiate, ditto.
9449 Ditto. ditto. ditto.
9450 Ditto. Cladapora, ditto.
9451 Ditto. Fenestella. ditto.
9452 Ditto. ditto. ditto.
9453 Ditto. ditto. ditto.
9454 Ditto. a fucoid, 1 mile N. of Warren.
9455 Ditto. ditto. ditto,
9456 Slaty SS., ditto. 3 miles N. E. of Warren.
9457 Ditto. ditto. ditto.
9458 Ditto. ditto. 1 mile N. of Warren.
9459 Ditto. ditto. 3 miles N. E. of Warren.
9460 Ditto. ditto. 1 mile N. of Warren.
9461 Ditto. ditto. ¼ mile N. of Warren.
9462 Red SS., ditto. 3 miles N. W. of Warren.

9463 Greenish SS., a fucoid, 3 miles N. W. of Warren.
9464 Ditto. ditto. 1 mile N. of Warren.
9465 Yellow SS., Strophomena, 3 miles N. W. of Warren.
9466 Ditto. ditto. ditto.
9467 Grey SS., Streptorhynchus, 4 miles S. W. of Warren.
9468 Ditto. ditto. ditto.
9469 Ditto. ditto. ditto.
9470 Ditto. ditto. ditto.
9471 Sandy shale, Platyceras, ditto.
9472 Ditto. ditto. ditto. (35 pieces).
9473 Ditto. Archaeocidaris, 3 miles N. W. of Warren.
9474 Thin SS. Lingula, ditto.
9475 Yellow SS. mollusk shell, ditto.
9476 Sandy shale, Cyrtena, ditto. (3 pieces).
9477 SS. spiral gasteropod, 2 miles S. of Warren, (box 4 pieces).
9478 Sandy shale, Bellerophon, ditto.
9479 Ditto. Productus, 3 miles N. W. of Warren.
to Ditto. ditto. ditto.
9488 Ditto. ditto. ditto. (13 pieces).
9489 Pebble SS. ditto. 4 miles S. W. of Warren.
9490 SS. ditto. ditto.
9491 Ditto. ditto. ditto.
9492 Sandy shale, Productella, ditto.
9493 Ditto. ditto. ditto.
9494 Ditto. ditto. ditto. (20 pieces).
9495 Shaly SS. Avicula, 3 miles N. W. of Warren.
9496 Micaceous SS. Allorisma? ditto.
9497 Ditto. ditto. ditto.
9498 Ditto. ditto. ditto. (4 pieces).
9499 Sandy shale, Grammysia, ditto.
9500 Ditto. ditto. ditto.
9501 Ditto. ditto. ditto.
9502 Ditto. ditto. ditto. (16 pieces).
9503 Ditto. Pleurotomaria, ditto.
9504 Ditto. Platyceras, ditto. (15 pieces).
9505 Ditto. Rhynchonella, ditto. (5 pieces).
9506 Ditto. Rhynchonella missourienses, 4 miles S. W. of Warren. 9507, 9508, 9509 ditto.
9510 Yellow SS. mollusk, 3 miles N. E. of Warren.
9511 Ditto. ditto. ditto.
9512 Ditto. ditto. ditto.

H.—Sandy shales under Sub-Olean Conglomerate, X.

9513 Yellow SS. crinoid, 2 miles E. of Warren.
9514 Ditto. Palæchinus, 1 mile N. of Warren.
9515 Ditto. ditto. 5 miles N. E. of Warren.
9516 Sandy shale, Dictyophyton, 1 mile N. of Warren.
9517 Ditto. ditto. ditto.
9518 Ditto. ditto. ditto.
9519 Ditto. ditto. ditto.
9520 Thin SS. Orthis michelini, 1 mile N. of Warren.
9521 Ditto. ditto. ditto.
9522 Ditto. ditto. ditto.
9523 Ditto. ditto. ditto.
9524 Ditto. ditto. ditto.
9525 Ditto. ditto. ditto. (13 pieces).
9526 Sandy shale, fucoids, 3 miles N. W. of Warren.
9527 Ditto. ditto. ditto.
9528 Ditto. ditto. ditto.
9529 Fossil mass, Spirifera, 1 mile N. W. of Warren.
to Ditto. ditto. ditto.
9538 Ditto. ditto. ditto.
9539 Sandy shale, Rhynchonella, 1 mile N. W. of Warren.
9540 Ditto. ditto. ditto.
9541 Ditto. ditto. ditto.
9542 Athyris, ditto. (21 pieces).
9543 Sandy shale, Edmondia? 1 mile N. of Warren.
9544 Ditto. ditto. ditto.
9545 Ditto. ditto. ditto.
9546 Ditto. ditto. ditto.
9547 Ditto. ditto. ditto.
9548 Ditto. Aviculopecten, ditto.
9549 Ditto. ditto. ditto.
9550 Ditto. ditto. ditto.
9551 Ditto. ditto. ditto.
9552 Ditto. ditto. ditto.
9553 Ditto. ditto. ditto.
9554 Ditto. Avicula, ditto.
9555 Ditto. ditto. ditto.
9556 Ditto. ditto. ditto.
9557 Yellow SS., Grammysia, ditto.

9558	Sand shale,	Bellerophon,	2 miles S. of Warren	(2 pieces).
9559	Dark shale,	Lingula,	ditto.	
9560	Ditto.	ditto.	ditto.	
9561	Ditto.	ditto.	ditto.	
9562	Ditto.	ditto.	ditto.	
9563	Ditto.	ditto.	ditto.	
9564	Ditto.	ditto.	ditto.	

J.—Flaggy SS. 150′ to 220′ below Sub-Olean, For. X.

9565	Yellowish SS.	bryozoa,	hill N. of Warren.	
9566	Ditto.	ditto.	ditto.	
9567	Ditto.	ditto.	ditto.	
9568	Ditto.	Crania,	ditto.	
9569	Ditto.	ditto.	ditto.	(25 pieces.)
9570	Brownish SS.	sanguinolites,	ditto.	(16 pieces.)
9571	Ditto.	Leptaena,	ditto.	
9572	Ditto.	ditto.	ditto.	
9573	Ditto.	ditto.	ditto.	
9573	Ditto.	ditto.	ditto.	
9574	Ditto.	ditto.	ditto.	
9575	Ditto.	ditto.	ditto.	
9576	Ditto.	Cuneamya,	ditto.	(4 pieces.)
9577	Ditto.	Aviculopecten,	ditto.	
9578	Ditto.	ditto.	ditto.	
9579	Brown shale,	ditto.	ditto.	
9580	Ditto.	ditto.	ditto.	
9581	Conglomerate,	Schizodus,	ditto.	
9582	Brown SS.,	ditto.	ditto.	
9583	Ditto.	ditto.	ditto.	(9 pieces.)
9584	Ditto.	Rhynchonella,	ditto.	
9585	Ditto.	ditto.	ditto.	
9586	Ditto.	ditto.	ditto.	(16 pieces.)
9587	Ditto.	Avicula.	ditto.	
9588	Ditto.	ditto.	ditto.	
9589	Ditto.	ditto.	ditto.	
9590	Ditto.	ditto.	ditto.	
9591	Ditto.	Spirifera,	ditto.	
9592	Ditto.	ditto.	ditto.	
9593	Ditto.	ditto.	ditto.	
9594	Ditto.	ditto.	ditto.	

9595 Grey SS. fucoid, hill N. of Warren.
9596 Ditto. ditto. ditto.
9597 Ditto. ditto. ditto.
9598 Ditto. ditto. ditto.
9599 Ditto. ditto. ditto.
9600 Ditto. ditto. ditto.
9601 Ditto. ditto. ditto.

K.—Shales underlying the above, For. X.

9602 Yellow SS. Orthoceras. ditto.
9603 Brown shale, gasteropod, 20 ft. above the asylum quarry.
9604 Ditto. ditto. ditto.
9605 Ditto. ditto. ditto. (1 box in lot.)

M.—Shales over Fish horizon, For. X (IX ?)

9606 Grey SS. Schizodus, hill north of Warren.
9607 Ditto. ditto. ditto.
9608 Ditto. ditto. ditto.
9609 Ditto. ditto. ditto.
9610 Ditto. Cypricardia, ? ditto.
9611 Ditto. ditto. ditto.
9612 Ditto. ditto. ditto.
9613 Ditto. Allorisma, ditto.
9614 Ditto. ditto. ditto.
9615 Ditto. ditto. ditto.
9616 Ditto. ditto. ditto.
9617 Ditto. ditto. ditto.
9618 Ditto. ditto. ditto.
9619 Ditto. ditto. ditto.
9620 Ditto. ditto. ditto.
9621 Ditto. ditto. ditto.
9622 Ditto. Yoldia, ? ditto.
9623 Ditto. ditto. ditto.
9624 Ditto. ditto. ditto.
9625 Ditto. ditto. ditto.
9626 Ditto. fucoid, ditto.

N.—Fish horizon, For. IX ?

9627 Flat pebble conglomerate, lamellibranch (large), 2½ miles N. E. of Warren.

O.—Shales over Tanner's Hill quarry, For. IX ?

9628 Sandy shale, Lingula, hill N. of Warren.
9629 Ditto. ditto. ditto.
9630 Ditto. ditto. ditto.
9631 Ditto. ditto. ditto. (4 pieces.)

P.—Tanner's Hill quarry, For. IX ? First Oil Sand ?

9632 Yellow SS. Goniatite, Garland.
9633 Brown SS. Cypricardia, hill N. of Warren.
9634 Yellow SS. Orthoceras, ditto.
9635 Grey SS. fucoid, ditto.

Q.—Shales and SS. below Tanner's Hill quarry.

9636 Yellow SS. Orthoceras, 2 miles E. of Warren.
9637 Brownish SS. fucoid, ? hill N. of Warren.
to Ditto. ditto. ditto.
9650 Ditto. ditto. ditto.

R².—Tanner's Hill Red Rock. Second Oil Sand ?

9651* Grey SS. trilobite, ? 3 miles S. W. of Warren.
9652 Ditto. fucoid, hill N. of Warren.
9653 Ditto. ditto. ditto.
9654 Ditto. ditto. ditto.

S.—Chemung Shales. Form VIII.

9655 Blue shale, lamellibranch, Brewery, Warren.
9656 ——————Rhynchonella, 2 miles N. of Warren (8 pieces).
9657 Brownish SS., Productella, 3 miles N. of Warren.
9658 Ditto. ditto. ditto.
9659 Ditto. ditto. ditto.
9660 Ditto. ditto. ditto. (16 pieces).
9661 Ditto. fucoid, 9 miles E. of Warren.
Loose specimens at Warren.
9662 Greenish SS., Dictyophyton.
9663 Ditto. ditto.
9664 Yellow SS., Archimedes?
9665 Ditto. ditto.
9666 Ditto. ditto.

9667 Yellow SS., Archimedes? (10 pieces).
9668 Ditto. a cephalopod.
9669 Grey SS., fucoid.
9670 Ditto. ditto.
9671 Ditto. ditto.

Northern Drift from vicinity of Warren.

9672 Syringopora.
9673 Ditto.
9674 Ditto.
9675 Favosite.
9676 Ditto.
9677 Cyathophyllum.
9678 Eridophyllum.
9679 Zaphrentis.
9680 A radiate.
9681 Fenestella.
9682 Ditto.
9683 Ditto. (3 pieces).
9684 Ambocœlia umbonata?
9685 Radiates (13 pieces).

OIL REGION COLLECTIONS.

By John F. Carll.

1881.

(To illustrate Reports I. II. III. IIII.)

These specimens are classified and grouped as follows:

1	Olean conglomerate,	9686 to 9724
2	Sub-Olean conglomerate,	9725 to 9757
	Shenango sandstone,	9758 to 9779
3	Carboniferous SS, Olean and above,	9780 to 9794
4	Berea, (Pit-hole) grit, Venango O. S. horizon,	9795 to 9823
5	Panama conglomerate,	9824 to 9839
6	Salamanca conglomerate,	9840 to 9843
7	Limestones,	9844 to 9867
8	Fish remains,	9868 to 9914
9	Plants,	9915 to 9954
10	Dictyophytons,	9955 to 9960
11	Fucoids,	9961 to 9991
12	Mollusca,	9992 to 10459
13	Calcareous deposits, Marl, &c.,	10460 to 10471
14	Drift specimens,	10472 to 10497
15	Slickensides,	10498 to 10502
16	Large specimens,	10503 to 10515
17	Specimens from oil wells, large pieces,	10516 to 10548
18	Sandpumpings from oil wells, in bottles,	10549 to 10738
19	Specimens of crude oil,	10739 to 10813

The conglomerates have been collected for the purpose of showing the difference between round pebbles and flat pebbles.

No critical study has been made of the fossils. They have been catalogued hastily, and the names herein given are only intended to indicate in a very general way, the class to which the specimens belong.

The geological horizons in which the specimens were found are designated by letters in brackets as below.

(A) Olean conglomerate and above,
(B) Shenango shale.
(C) Sub-Olean conglomerate (Shenango sandstone).
(D) Crawford shale.
(E) Venango oil group.
(F) Chemung shales.

Where the localities, or fossils have been mentioned in the reports of progress, references are given thus (I^3, p. 36).

A. Olean Conglomerate—Ovoid Pebbles. Form. XII.

9686 Conglomerate, Trumbull Co., O., near State line, 2 miles N. of Orangeville.
9687 Ditto. ditto.—Hobarts Quarry, 6 miles S. W. of Jamestown.
9688 Ditto.—Mercer Co., hill W. of Sharon.
9689 Ditto.—Crawford Co., College Hill, Meadville (I^3, p. 36).
9689 Pebbles, ditto. ditto. ditto.
9690 Conglomerate, ditto.—Southwicks Hill, (I^3, p. 35).
9691 Ditto. ditto.—E. line of Randolph twp.
9691 Pebbles, ditto.
9692 Conglomerate, ditto.—Church Run Hill.
9692 Pebbles, ditto.
9693 Conglomerate, Warren Co., Ware farm, 1½ miles S. W. of Triumph.
9693 Pebbles, ditto.
9694 Conglomerate, ditto—Tidioute & Fagundus roads.
9694 Pebbles, ditto.
9695 Conglomerate, ditto—York Hill, 2 miles S. of Youngsville (I^4, p. 262).
9695 Pebbles, ditto.
9696 Conglomerate, ditto—Pennsylvania House station.
9696 Pebbles, ditto.
9697 Conglomerate, ditto—Garland quarry (I^4, p. 163).
9698 Ditto. ditto—3 miles N. of Pittsfield.
9698 Pebbles, ditto.
9699 Conglomerate, ditto—State roads, W. of Deadman's Run (I^4, p. 229).

9699 Pebbles, ditto.
9700 Conglomerate, ditto—Miller's Rocks, 1 mile N. of Wrightsville (I⁴, p. 529).
9700 Pebbles, ditto.
9701 Conglomerate, ditto—Nuttall's Rocks, 4½ miles N. of Pittsfield (I⁴, p. 256).
9701 Pebbles (large), ditto.
9701 Ditto. (small), ditto.
9702 Conglomerate, ditto—Pike's Rocks (I⁴, p. 239).
9702 Pebbles (large), ditto.
9702 Ditto. (small), ditto.
9703 Conglomerate, ditto—2 miles N. E. of Russelburg (I⁴, p. 247).
9703 Pebbles, ditto.
9704 Pebbles (average), ditto—Gardner's Rocks, (I⁴, p. 321).
9705 Conglomerate, ditto—Knapp's, Quaker Hill.
9705 Ditto—with iron, ditto.
9705 Concretionary iron, ditto.
9705 Pebbles, ditto.
9706 Conglomerate, ditto—"Singular Rocks," Quaker Hill (I⁴, p. 321).
9706 Ditto.
9706 Pebbles, ditto.
9707 Conglomerate (local), ditto—over Quaker Hill coals (I⁴, p. 235).
9707 Ditto, under ditto.
9707 Pebbles, ditto—near north coal bank, Quaker Hill.
9708 Conglomerate, ditto—Great Bend, (I⁴, p. 356).
9708 Pebbles, ditto,
9708 Ditto. (fine), ditto.
9709 Conglomerate, ditto—2½ miles S. E. of Kinzua Village.
9709 Pebbles, ditto.
9710 Ditto—Dixon Farm near Great Bend.
9711 Ditto—Sill's Run Point, 2½ miles W. by S. from Warren (I⁴, p. 346).
9712 Pebbles (very large), ditto—Tidioute road, 4 miles S. W. of Warren.
9713 Ditto. ditto—4½ miles S. W. of ditto.
9714 Ditto—Shaw well, 10 miles N. E. of Tidioute (I⁴, p. 342).

9715 Conglomerate, Shaw well, 3½ miles W. of Sheffield.
9716 Ditto, ditto—Sheffield road, Balltown Hill.
9716 Pebbles, ditto,
9716 Ditto. (small), ditto.
9717 Conglomerate, Cattauraugus Co., N. Y., "flat iron," Rock City, 3½ miles S. of Olean.
8717 Pebbles, ditto.
9718 Conglomerate, Catt. Co., N. Y., 8½ miles S. of Salamanca near Red House & Limestone road (I⁴, p. 188).
9718 Pebbles, ditto.
9719 Pebbles, McKean Co., Rutherford rocks, 3 miles S. of Bradford.
9720 Conglomerate, ditto—Mt. Raub, Bradford.
9720 Pebbles, ditto.
9721 Conglomerate, Allegany Co., N. Y., 6 miles S. S. W. of Wellsville.
9721 Ditto.
9721 Pebbles, ditto.
9722 Conglomerate, ditto—2 miles N. W. of Little Genesee.
9722 Pebbles, ditto.
9723 Conglomerate, Elk Co., N. of Spring Creek mouth, 12 miles S. W. of Ridgway.
9723 Ditto.
9723 Pebbles, ditto.
9724 Conglomerate with iron, Warren Co., near Cobham well, 2½ miles S. E. of Warren.

C. Sub-Olean Conglomerate, Flat pebbles. (Shenango SS.; Ferriferous SS.)

9725 Conglomerate, Crawford Co., 1½ miles S. E. of Spartansburg (I³, p. 34).
9726 Ditto. Erie Co., 2½ miles S. of Corry (I⁴, p. 222).
9726 Ditto.
9726 Pebbles, ditto.
9727 Conglomerate, Catt. Co., N. Y., Robbins' Hill (I⁴, p. 335).
9727 Ditto.
9727 Pebbles, ditto.
9728 Ditto. Warren Co., N. W. cor. Elk Twp. (I⁴, p. 335).
9728 Ditto (small), ditto.
9729 Conglomerate, ditto—near Germany P. O.

9729 Conglomerate, Warren Co., N. W. cor. Elk Twp.,—near Germany P. O.
8729 Pebbles, ditto.
9730 Conglomerate, ditto—2 miles S. of Germany P. O.
9731 Ditto. ½ mile N. W. of Quaker Hill coal bank (I⁴, p. 334).
9731 Pebbles, ditto.
9731 Ditto (small), ditto.
9732 Conglomerate, ditto—1½ miles N. E. of Kinzua village.
9732 Pebbles, ditto.
9733 Conglomerate, ditto—2 miles S. of ditto.
9733 Pebbles, ditto. ditto.
9734 Conglomerate, ditto—hill S. W. of ditto.
9734 Pebbles, ditto. ditto.
9735 Conglomerate, ditto—over Cobham well, 2½ miles S. E. of Warren.
9735 Ditto.
9735 Pebbles, ditto. ditto.
9736 Conglomerate, ditto—1 mile N. E. of 9735.
9736 Ditto.
9737 Conglomerate, ditto—2½ miles S. of Warren.
9738 Ditto. ditto—6 miles N. E. of Tidioute, road from Cobham to Baxter's (I⁴, p. 320).
9739 Ditto. ditto—South line on Sheffield and Ball-town road.
9740 Ditto. ditto—Clarendon Cliffs (I⁴, p. 354).
9740 Pebbles, ditto—South line on Sheffield and Ball-town road.
9740 Ditto (small), ditto. ditto.
9741 Conglomerate, ditto—hill W. of Sheffield.
9741 Ditto.
9741 Pebbles, ditto. ditto.
9742 Conglomerate, McKean Co., Ludlow station.
9742 Pebbles, ditto. ditto.
9743 Conglomerate, ditto. ¾ mile N. of Kane.
9744 Ditto.
9744 Pebbles, ditto. ditto.
9745 Conglomerate, ditto—Wintergreen Run Tract, 3431.
9746 ditto. ditto—just N. of Marshburg.

9747 Conglomerate, Catt. Co., N. Y., 1 mile N. of Corrydon (I⁴, p. 188).
9747 Ditto.
9748 Conglomerate, McKean Co., east point of Mt. Raub.
9748 Pebbles, ditto. ditto.
9749 Conglomerate, ditto. 5 miles N. of Wilcox, near Wilcox wells.
9750 Conglomerate and fossils, ditto. ditto.
9750 Ditto.
9750 Ditto.
9750 Ditto.
9751 Conglomerate, Elk Co., mouth of Spring Creek.
9752 Ditto. ditto. Millstone Twp., near Halleck and Johnson well.
9753 Conglomerate, Elk Co., 6 miles S. of Kane, near Roy & Archer well.
9754 Conglomerate, ditto. ¾ mile N. E. of Ridgway.
9655 Ditto. ditto. Ridgway railway cut.
9755 Pebbles, ditto. ditto.
9756 Conglomerate, Allegany Co., N. Y., 6 miles S. of Wellsville.
9756 Pebbles, ditto. ditto.
9757 Conglomerate, ditto. 1½ miles N. of Wellsville.

C. Ferriferous SS. type.

9758 Conglomerate and iron, Warren Co., near Pike's rocks.
9759 Ditto. ditto.—3½ miles S. W. of Corrydon.
9759 Ditto.
9760 Conglomerate and iron, Warren Co., Elk township, S. E. corner tract 5548, ¼ mile N. E. of 9759.
9761 Conglomerate and iron, Warren Co., 4½ miles E. N. E. of Russellburg, O. C. Gages.
9761 Ditto. ditto. ditto.
9762 Ditto. ditto—S. E. corner of Pine Grove township, T. Sheehan's.
9762 Ditto. ditto. ditto.
9763 Ditto. ditto—¾ miles S. of Singular Rocks, Culbertson's.
9763 Ditto. ditto. ditto.

9864 Rocks, Culbertson, T. Sheehan's—3 miles, N. N. W. of Warren, N. Loree's.
9765 Ditto. ditto—5 miles, N. W. of Warren M. Shirks.
9766 Ditto. ditto—3 miles N. of Youngsville, G. Sullivan.
9767 Ditto. ditto—3 miles N. of Youngsville, Johnson's.
9767 Ditto. ditto. ditto.
9768 Ditto. ditto—Hill, W. of Sheffield.
9768 Ditto. ditto. ditto.
9769 Yellow SS., Warren Co., 3 miles N. E. of Tidioute.
9769 Ditto. ditto. ditto.
9770 Ditto. ditto.—Economite Hill, Tidioute.
9770 Ditto. ditto. ditto.
9771 Ditto. ditto.—on road between Tidioute and Triumph.
9772 Ditto. ditto.—½ mile S. of Grand Valley.
9772 Ditto. ditto. ditto.
9773 Ditto. Crawford Co., 3 miles, N. N. W. of Titusville, Diamond mill.
9773 Ditto. ditto. ditto.
9774 Grey SS., Venango Co., Incline plane at Oil City.
9775 Ditto. ditto.—Middle quarry, Franklin.
9776 Ditto. ditto—Lower quarry, ditto.
9777 Yellow SS., Crawford Co., 1½ miles, E. of Jamestown.
9778 Ditto. ditto.—1 mile, N. E. of Jamestown Snodgrass quarry.
9779 Ditto. Vernon township Trumbull Co., Ohio, 3 miles, N. of Orangeville.

A. Sandstone of the Olean Conglomerate and above.

9780 Light grey SS. (Olean) Allegany Co., N. Y., 6 miles S. of Wellsville.
9781 Yellow grey SS. (ditto.) Warren Co., Garland quarry.
9782 Ditto. (ditto.) ditto. Trumph Hill.
9783 Ditto. (ditto.) Venango Co., Incline Plane, Oil City.

9784 Yellow SS. (Olean) Crawford Co., College Hill, Meadville.
9784 White SS. (ditto.) ditto. ditto.
9785 Mottled SS. (ditto.) ditto. Thorp quarry, E. of Meadville (I^3, p. 37).
9785 Brown SS. and iron (ditto.) ditto. ditto.
9786 Dark grey S. S. (ditto.) ditto. Christy quarry, 2¾ miles N. E. of Jamestown (I^3, p. 52).
9786 White SS. (ditto.) ditto. ditto.
9787 Ditto. (ditto.) Trumbull Co..O., Hobart quarry, 6 miles S. W. of Jamestown (I^3, p. 56).
9788 Yellow SS. (Connoquenessing) Mercer Co., Foulke quarry, 6½ miles S. W. of Jamestown (I^3, p. 56).
9786 Redish SS. (Tionesta) McKean Co., near Kane.
8790 Brownish SS. (Homeward?) Warren Co., over coal bed, S. of Kinzua Village (Sect. XXII, I^4, p. 302).
9791 Yellowish SS. (Tionesta?) ditto. roof of Farnsworth's coal bed (I^4, p. 364).
9792 Dark grey SS. (Kinzua Creek?) Venango Co., 2 miles S. E. of President.
9793 Yellow SS. (Tionesta?) ditto. 1½ miles W. of Franklin.
9794 Yellow SS. spotted, Mahoning Co., O., Montgomery quarry, 2 miles S. E. of Youngstown.
9794 Brown SS. spotted, ditto. ditto.

D, E. Berea Grit and horizon of Venango Oil Sands.

9795 Grey SS. spotted (Berea) Trumbull Co., O., from oil shaft, 1½ miles S. of Power's Corners (I^3, p. 430).
9795 Grey SS. (Berea Oil rock), ditto.
9796 Grey SS. (Berea) Trumbull Co., O., Coles' quarry, near north line of Vernon Twp., in ravine W. of Mossmantown, Pa.
9797 Grey SS. (Berea?) Trumbull Co., O., Loomis quarry, 1 mile S. of West Williamsfield.
9798 Yellow SS. (Berea?) Crawford Co., Hurlburt's quarry, N. W. of Jamestown.
9798 Ditto.

9799 Conglomerate (Pithole grit) Forest Co., 2 miles S. of Tionesta.
9799 Ditto.
9799 Brownish SS. ditto.
9800 Grey SS. (2nd SS. B.) Warren Co., Tidioute Creek, 1 mile N. of Allegheny river.
9801 Grey SS. (ditto.) Warren Co., Tidioute Oil shaft (I', p. 344).
9802 Yellowish SS. (2nd SS. B.) Warren Co., Cobham station (I', p. 291).
9803 Ditto. (ditto.) ditto. river bank, 1 mile below Cobham P. O. (I', p. 290).
9804 Grey SS. (ditto.) ditto. mouth of Potter Run, Tidioute (I', p. 289).
9805 Grey SS. (ditto.) ditto. ½ mile below Thompson station (I', p. 292).
9806 Ditto. (ditto.) ditto. ditto.
9807 Conglomerate (2nd SS. A.) ditto. mouth of Conklin Run.
9808 Ditto. (ditto.) ditto. 1 mile below Thompson station.
9809 Conglomerate, ditto. No. 27 of Great Bend section (I', p. 302).
9810 Grey SS. ditto. ditto.
9811 Conglomerate, ditto. cotton farm, 2½ miles N. W. of Garland (No. 4 of section; I', p. 258).
9811 Ditto.
9812 Conglomerate (1st Oil SS.?) Warren Co., Horn's Mill, Hosmer Run (I', p. 250).
9812 Ditto.
9813 Conglomerate (3d Oil SS.) Warren Co., Tidioute shaft (I', p. 344).
9813 Ditto.
9813 Ditto.
9813 Pebbles. ditto.
9814 Conglomerate, Warren Co., 2½ miles S. E. of Warren R. R. cut.
9815 Ditto. ditto. Jackson's Station (No. 12 of section; I', p. 295).
9815 Pebbles, ditto. ditto.

9816 Conglomerate, Warren Co., 2 miles N. E. of Youngsville, Irvine run (I', p. 263).
9816 Ditto. ditto. ditto.
9817 Yellowish SS. ditto. Asylum quarry, 1½ miles N. W. of Warren (I', p. 317).
9817 Ditto.
9817 Ditto.
9818 Wrightsville Conglomerate, Warren Co., ½ mile N. E. of Wrightsville (I', p. 230).
9819 Grey SS., ditto.
9820 Conglomerate, Warren Co., Anderson farm ¾ mile N. E. of Jackson Run P. O. (I', p. 242).
9821 Conglomerate, Warren Co., 1 mile S. of Jackson Run P. O.
9822 Ditto. ditto.—1 mile S. S. E, of Russelburg (at Briggs Well, I', p. 206).
9823 Ditto.—Chatauqua Co., N. Y.. Popes Rocks, 5 miles N. by E. of Frewsburg (I', p. 180).
9823 Yellow SS., ditto.
9823 Pebbles, ditto.

F. Panama conglomerate.

9824 Conglomerate, Chatauqua Co., N. Y., Panama Village (I', p. 180).
9824 Ditto.
9824 Pebbles, ditto.
9825 Conglomerate, Chaut. Co., N. Y., Ashville quarry, 4½ miles N. E. of Panama.
9825 Pebbles, ditto.
9826 Conglomerate, Chaut. Co., N. Y., 1 mile W. S. W. from Grant Station (S. of Eureka Well, I', p. 199).
9826 Pebbles, ditto.
9827 Conglomerate, Warren Co., W. side of Little Broken-straw, ¼ mile S. of State line (I', p. 199).
9827 Ditto.
9828 Grey SS., (horizon?) Warren Co., Faichney quarry, 2 miles W. of Sugar Grove (I', p. 240).
9829 Conglomerate, (horizon?) ditto. Dennison farm, 2½ miles E. of Sugar Grove (I', p. 240).

9830 Conglomerate, Chautauqua Co.,N.Y.,Chautauqua quarry, Panama Station (I^3, p. 64).
9830 Grey SS., ditto. ditto.
9831 Conglomerate, ditto.—3½ miles E. N. E. of Clymer.
9831 Ditto. ditto. ditto.
9832 Ditto. ditto.—Brownells, 2½ miles N. E. of Clymer.
9833 Ditto. ditto.—Upton quarry, 2 miles N. of Clymer (I^4, p. 201).
9833 Ditto.
9833 Pebbles, ditto.
9833 Brownish SS., ditto.
9834 Conglomerate, Erie Co., Blakesley quarry, 3 miles S. of Wattsburg (I^3, p. 65).
9834 Ditto. ditto. ditto.
9835 Ditto. ditto.—Doolittle quarry, 3½ miles N. E. of Union City (I^3, p. 66).
9836 Ditto. ditto.—Middleton quarry, 3½ miles N. W. of Union City (I^3, p. 66).
9836 Grey SS., ditto.
9837 Conglomerate, Erie Co., LeBoeuf quarry (I^3, p. 67).
9837 Ditto.
9837 Pebbles, ditto.
9838 Grey SS., Erie Co., Franklin Twp., Howard's quarry (Q^4, p. 246).
9839 Flaggy SS., ditto. ravine 1 mile E. of Middleboro' (Q^4, p. 265).

F. Salamanca conglomerate.

9840 Conglomorate, Cattaraugus Co., N. Y., 4 miles N. of Salamanaca (I^4, p. 203).
9840 Ditto.
9840 Ditto.
9841 Conglomerate, Catt. Co., N. Y., 1 mile N. of Salamanca (I^4, p. 203).
9841 Pebbles, ditto. ditto.
9842 Conglomerate, ditto.—5 miles S. of Salamanca, Bennetts (Warrant 24, I^4, p. 206).

9842 Pebbles, Catt. Co., N. Y., 5 miles S. of Salamanca, Bennetts (Warrant 24, I^4, p. 105).

9843 Conglomerate, ditto.—¾ mile N. of Carrollton station (I^4, p. 203).

A. Limestones of horizon A.

9844 Crinoidal limestone, Allegheny Co., bluff of Monongahela river, Pittsburgh.

9845 Ferriferous limestone, Venango Co., 1½ miles W. of Emlenton, on road to Six Points, 430′ above river.

9846 Ferriferous limestone, Clarion Co., between Emlenton and St. Petersburg.

9846 Ditto.

9847 Ferriferous limestone (8′ seen), Venango Co., Fox farm, 6 miles W. by S. of Oil City.

9847 Ditto.

9847 Ditto.

9848 Freeport limestone, *Westmoreland Co.*, Chartier sta.

9849 Limestone in sandstone, layer 3′ thick, lying in the sandstone quarry at top of Vespertine, at Queen's Run, Clinton Co. (H. M. Chance, 1878).

D. F. Thin impure and sporadic Limestones.

9850 Limestone, 8″ to 15″ thick, Trumbull Co., O., just below Coles' quarry in ravine W. of Mossmantown.

9851 Limestone, thin, above Berea grit, Trumbull Co., O., Mathew's farm, 2 miles S. of West Williamsfield.

9852 Limestone, 2′ to 3′ thick, Crawford Co., Gibson Run, just above the level of Gibson Oil Well (M^3, p. 106).

9853 Limestone, about 1′ thick, Crawford Co., at base of Snodgrass flagg quarry, 140′± below Shenango SS. (M^1, p. 106).

9854 Limestone, 0 to 8″ thick, Crawford Co., ravine below Snodgrass quarry, 35′ below Shenango SS.

9855 Limestone, 12″ to 15″ thick, Crawford Co., McElhany run, N. of Jamestown, 40′ ± below Shenango SS.

9856 Limestone, about 2′ thick, Venango Co., Franklin, 20′ below Shenango SS.

9857 Limestone, 0 to 18″ thick, Venango Co., ½ mile S. of Franklin, about 20′ below Shenango SS. (M^3, p. 105).

9858 Limestone, about 2′ thick, Venango Co., Oil City, 30′ above Pithole grit.

9859 Limestone 0′ to 2′ thick, Venango Co., ½ mile S. of McClintockville, base of Pithole grit (M^3, p. 105).

9859 Ditto.

9860 Limestone, 0′ to 2′ thick, Venango Co., Petroleum Center, base of Pithole grit.

9861 Limestone, thin and irregular, Venango Co., W. side French creek, 1 mile S. E. of Utica, base of Pithole grit.

9862 Limestone, 1′ to 2½′ thick, Crawford Co., 7 miles S. of Meadville; on slope N. of old lake feeder, and 75′ above its water.

9863 Limestone, 2′ thick, Crawford Co., Cemetery Run, Meadville, referred to in Rogers' final report.

9863 Ditto.

9864 Limestone 2′± thick, Crawford Co., run W. of Meadville, White's Meadville lower limestone.

9865 Limestone, 0 to 6″ thick, Venango Co., ½ mile S. of President Station, at base of Pithole grit, fossils (M^3, p. 105).

9865 Ditto.

9865 Ditto.

9866 Limestone, 2′ to 3′ thick, Forest Co., N. bank of Tionesta creek, 4 miles E. of Tionesta Village, Kelley quarry (M^3, p. 90).

0867 Limestone, thin and irregular, Erie Co., ravine 1 mile E. of Middleboro', horizon of Panama conglomerate (Q^4, p. 265).

Fish remains.

9868 (?) Impression of bone? Mercer Co., ½ mile W. of Sharon; 80′ above the depot (loose).

9869 (C?) Fish remains, Mercer Co., Brookfield road, ½ mile W. of Sharon, in 5′ band, 110′ above the depot.

9869 Ditto.

9870 (C) Fish remains and shells, Crawford Co., 1½ miles E. of Jamestown, Christy quarry (I^3, p. 56).

9871 (D) Fish teeth, &c., Venango Co., 1½ mile S. of Valley depot at Franklin, 20′ below Shenango SS.
9871 Ditto.
9871 Ditto.
9871 Ditto.
9872 (D) Fish teeth and shells, Venango Co., lower quarry, Franklin.
9873 (C) Fish spine, ditto.
9874 (C) Fish fin? ditto.
9875 (D) Fish teeth, &c., Venango Co., middle quarry, Franklin.
9876 (C) Fish remains and shells, ditto.
9877 (C) Fish spine, ditto.
9877 Ditto.
9877 Ditto.
9878 (C) Fish spine, Venango Co., top of Bell quarry, Franklin.
9878 Ditto.
9879 (?) Fish spine, or fin, Venango Co., ½ mile S. W. of Franklin, 160′ above river (loose).
9880 (C) Fish teeth, Crawford Co., ½ mile N. of Evansburg station, Miller's quarry (I^3, p. 44).
9881 (?) Fish spine? Erie Co., 2 miles S. of Concord (loose).
9882 (C?) Fish spine, &c., Venango Co., 1½ miles S. E. of Oil City, Ogden quarry.
9883 (C) Fish spine, Venango Co., Cottage Hill quarry, Oil City.
9884 (?) Fish spine, Venango Co., 1 mile N. of Oil City, on Oil Creek (loose).
9884 Ditto.
9885 (D) Fish teeth, &c., Venango Co., on Oil Creek, 1 mile N. of Miller farm; horizon of Pithole grit.
9886 (D) Fish teeth, &c., Venango Co., on Oil Creek, 1½ miles N. of Miller farm, at the "Night Cap."
9887 (D) Fish teeth, &c., Venango Co., ½ mile N. of the "Night Cap."
9888 (C?) Fish spine, Venango Co., 1 mile S. of Titusville (loose).
9888 Ditto.

9889 (?) Fish spine, Crawford Co., Beach farm, Church run, 2 miles N. of Titusville (loose).
9890 (C) Fish remains, Crawford Co., Spring Creek road, ½ mile from Titusville.
9890 Ditto.
9890 Ditto.
9890 Ditto.
9890 Ditto.
9890 Ditto.
9891 (D) Fish remains, Crawford Co., 3 miles N. of Titusville, Thompson's Mill, probable horizon of Pithole grit.
9892 (?) Fish spine, Crawford Co., 2 miles E. of Titusville, near Chase's Mill (loose).
9893 (?) Fish spine, Venango Co., 1 mile N. of Pleasantville, Curtis' farm (loose).
9893 Ditto.
9893 Ditto.
9894 (?) Fish spine, Venango Co., 1½ miles N. E. of Pleasantville, Mitchell's farm (loose).
9895 (A) Fish spines, or fins, Venango Co., 1½ miles N. E. of Pleasantville (loose).
9895 Ditto.
9896 (A) Fish spine, ditto.
9896 Ditto. (2 pieces.)
9897 (C) Fish remains, Warren Co., Economite hill, S. of Tidioute.
9897 Ditto.
9897 Ditto.
9897 Ditto.
9897 Ditto.
9897 Ditto.
9897 Ditto.
9898 (?) Fish spine, Warren Co., 1 mile S. of Cobham station (loose).
9899 (E) Fish plate, Warren Co., town of Warren, about 20' above Tanner's Hill quarry.
9900 (E) Fish fin, ditto.
9901 (E) Fish bones, Warren Co, Asylum quarry, 1½ miles N. W. of Warren (I' p. 317) (3 pieces).

9901 (E) Fish bones, Warren Co., Asylum quarry, 1½ miles N. W. of Warren (I' p 317) (3 pieces).
9901 Ditto. (2 pieces).
9902 Large pebbles, ditto.
9903 (D?) Impression of tooth? Warren Co., 2½ miles N. E. of Warren (loose).
9904 (?) Impression of plate? Warren Co., river flat at Great Bend (loose).
9905 (C) Fish spine, Warren Co., 1 mile S. W. of West Spring creek (loose).
9906 (C) Fish tooth, Warren Co., 2 miles N. E. of Wrightsville, Jaquay's water well (I², p. 24).
9907 (?) Fish plate? McKean Co., Tuna flats, 1 mile N. of Bradford (loose).
9908 (F) Fish bone, Chautauqua Co., N. Y., 4 miles N. of Panama, Williams' quarry (I², p. 70).
9909 (F) Fish plate? and shells, Cattaraugus Co., N. Y., ¾ mile W. of Five Mile corners (loose).
9910 (Catskill?) Fish plate, Potter Co., on Fishing creek, 1 mile below Hebron (2 pieces).
9911 (Ditto). Fish plate? and shells, ditto.
9912 (Ditto). Fish remains, Allegany Co., N. Y., quarry at Wellsville.
9912 Ditto.
9912 Ditto.
9913 (Ditto). Fish remains, Allegany Co., N. Y., Stannard's corners, 2¾ miles S. of Wellsville.
9914 (Ditto). Fish remains, Allegany Co., N. Y., 2 miles W. by S. of Wellsville, Fassett's quarry.
9914 Ditto.
9914 Ditto.

Plants.

9915 (A) Calamite, Mercer Co., 1½ miles E. of Sharon.
9916 (A) Lepidodendron, Mercer Co., ½ mile, W. of Sharon.
9917 (A) Lepidodendron, ? Mercer Co., ½ mile W. of Greenville.
9918 (A) Lepidodendron, Armstrong Co., Brady's Bend (loose).

9919 (A) Sigillaria, Armstrong Co., 2½ miles W. of Brady's Bend.
9920 (A) Sigillaria, Armstrong Co., 2 miles W. of Brady's Bend.
9921 (A) Sigillaria, Armstrong Co., Pine Run, 2¼ miles W. of Brady's Bend.
9922 (A) Lepidodendron, Crawford Co., 1 mile E. of Jamestown.
9923 (A) Lepidodendron, Crawford Co., 1 mile N. E. of Jamestown, Snodgrass Upper quarry (I^3, p. 54).
9924 (C) Plants and shells, Mercer Co., 1½ miles E. of Jamestown, Christy quarry (I^3, p. 56).
9925 (A) Lepidodendron, Crawford Co., Thorp quarry, 2 miles E. of Meadville (I^3, p. 37).
9926 (A) Lepidodendron, ditto, (2 pieces).
9927 (A) Calamite? ditto, (2 pieces).
9928 (A?) Lepidodendron, Venango Co., near Cooperstown (loose).
9929 (C) Lepidodendron, Venango Co., Bell quarry, Franklin.
9929 Ditto.
9929 Ditto.
9929 Ditto.
9930 (C) Lepidodendron and matrix, ditto.
9931 (C) Lepidodendron cone, ditto—(2 pieces).
9932 (C?) Calamite, ditto—(loose) (5 pieces).
9933 (A) Calamite, Venango Co., 2½ miles S. of Oil City (2 pieces).
9934 (A?) Sigillaria, Venango Co., 4 miles S. of Titusville (loose).
9935 (C) Lepidodendron, Venango Co., 3 miles S. E. of Titusville, McGee Hill.
9936 (A) Lepidodendron, Venango Co., Ennis Hill, Pleasantville (loose).
9937 (A) Lepidodendron, ? ditto.
9938 (A) Lepidodendron, ditto.
9939 (A) Lepidodendron. ditto,
9939 Ditto.
9939 Ditto.
9940 (A) Stigmaria, Venango Co., 1½ miles S. W. of Pleasantville.

9941 (A) Lepidodendron, Warren Co., Economite Hill.
9942 (E) Plants, Warren Co., river bank, 1 mile below Cobham P. O.
9942 Ditto.
9943 (E) Plants, Warren Co., Tanner's Hill quarry, Warren (I⁴, p. 297).
9944 (E) Plants, Warren Co., Asylum quarry, 1½ miles N.W. of Warren (I⁴, p. 317).
9944 Ditto—(4 pieces).
9945 (A) Fern, Warren Co., Quaker Hill coal bank (I⁴, p. 322).
9946 (A) Neuropteris? Ditto (2 pieces).
9947 (A) Plants, in roof slate, ditto.
9948 (C) Plants, Warren Co., Jaquay's water well, 2 miles N. E. of Wrightsville (I³, p. 24).
9949 (C) Lepidodendron, Warren Co., 1 mile E. of Sheffield.
9950 (A) Calamite, Venango Co., River Hill, S. W. of President (3 pieces).
9951 (A) Calamite, Forest Co., near Marienville.
9951 Ditto.
9952 (A) Lepidodendron? Ditto.
9953 (F) Cast of plant stem, Chautauqua Co., N. Y., from Chautauqua quarry, 5 miles W. of Panama, 5 pieces (I³, p. 64).
9954 (Catskill?) Plants, Potter Co., quarry at Coudersport.
9954 Ditto.
9954 Ditto.

Dictyophytons.

9955 (D) Dictyophyton, Erie Co., 1¼ miles W. of Concord.
9956 (D) Ditto. Crawford Co., 1 mile S. of Sparta.
9957 (D) Ditto. Crawford Co., 3 miles N. W. of Pleasantville, Nelson farm (I, p. 79, foot note).
9957 Ditto.
9957 Ditto.
9957 Ditto.
9957 Ditto.
9957 Ditto.
9957 Ditto.

9957 (D) Dictyophyton, Crawford Co., 3 miles N. W. of Pleasantville, Nelson farm (I, p. 79, foot note).
9958 (D) Dictyophyton, Venango Co., Miller farm on Oil Creek.
9958 Ditto.
9958 Ditto.
9959 (?) Dictyophyton? Venango Co., near Pleasantville (loose).
9960 (?) Dictyophyton? Forest Co., 1 mile E. of Tionesta (loose).

Fucoids.

9961 (D) Cauda-galli, Venango Co., Oil City.
9962 (D) Fucoid, Venango Co., Oil Creek, near Bull Run.
9963 (D) Fucoid, ditto.
9963 Ditto.
9964 (D) Fucoid, Venango Co., 1½ miles N. of Miller farm.
9965 (D) Fucoid, Venango Co., junction of Pine Creek with Oil Creek.
9966 (D) Fucoid, Warren Co., Dennis Run, near Tidioute.
9967 (E) Fucoid, Warren Co., Tidioute Oil Shaft.
9967 Ditto,
9968 (E) Fucoid, Warren Co., Tidioute.
9969 (?) Fucoid, Warren Co., near Cobham station (loose).
9970 (D) Fucoid, Warren Co., Point of Dennis Run & Allegheny river.
9971 (E) Fucoid, Warren Co., 2½ miles W. of Warren at Grosz's.
9972 Ditto, 1½ miles N. W. of Warren, Asylum quarry (I', p. 317, No. 7 of Section).
9973 (E) Fucoid, Warren Co., Warren borough.
9974 (?) Fucoid, Warren Co., Warren borough (loose).
9975 (E) Fucoid, Warren Co., Warren, just above Red Rock.
9976 (E) Fucoid, Warren Co., R. R. cut N. of N. Warren.
9977 (E) Fucoid, Warren Co., 3 miles N. W. of Russelburg.
9977 Ditto.
9977 Ditto,
9977 Ditto.

9978 (E) Fucoid, Warren Co., Lottsville (2 pieces).
9979 (E) Fucoid, Warren Co., 1 mile N. of Spring Creek station.
9980 (?) Fucoid? Warren Co., 2½ miles S. of Columbus (loose).
9981 (D) Fucoid, Warren Co., Stoneham Station.
9982 (D) Fucoid, Warren Co., Sills Run, 4 miles S. W. of Warren.
9983 (?) Fucoid, Warren Co., Great Bend (loose).
9984 (?) Fucoid, Warren Co., Kinzua Village (loose).
9985 (B) Fucoid, Warren Co., near Germany P. O.
9986 (D) Fucoid, Crawford Co., 1½ miles N. W. of Harmonsburg.
9937 (F) Fucoid, Crawford Co., Spring Corners.
9988 (F) Fucoid, Erie Co., LeBoeuf quarry (I^3, p. 67).
9988 Ditto.
9988 Ditto
9989 (F) Fucoid, Chautauqua Co., N. Y. Panama, 30′ below the conglomerate (I^3, p. 59).
9990 (F) Fucoid, Chautauqua Co., N. Y., outlet of Chautauqua Lake, at Dexterville.
9990 Ditto.
9990 Ditto.
9991 (F) Fucoid, Allegany Co., N. Y., 3½ miles S. of Wellsville.

Shells from Mercer county.

9992 (C) Rhynchonella, &c., ½ mile N. of Sharon (5 pieces).
9993 (C) Discina, ditto. (3 pieces).
9994 (D) Lingula shale, W. bank of Shenango, Sharon, Iron Works, 10′ above water, (2 pieces).
9994 Ditto. (2 pieces).
9985 (D) Lingula shale (brown) Orangeville, water level of Pymatuning Creek.
9995 Ditto.
9995 Ditto.
9995 Ditto.

Shells from Crawford county.

9996 (D) Conularia, &c., Gibson Run, 1 mile N. E. of Jamestown.
9997 (D) Discina, &c., ditto, (7 pieces).

9998 (D) Lingula, Christy Run quarry, ½ mile E. of Jamestown (I^3, p. 54).
9999 (D) Orthis, ditto.
10000 (D) Conularia & Discina, ditto. (2 pieces).
10001 (D) Discina, Lingula, &c., ditto. (12 pieces).
10002 (D) Lingula shale, Hurlburt quarry, 5½ miles N. W. of Jamestown.
10002 Ditto.
10003 (E?) Aviculopecten, Spirifer &c., Mill Run, Meadville (I^3, p. 41).
10004 (E?) Porcellia nodosa? ditto.
10005 (E?) Modiola? ditto.
10006 (E?) Orthoceras, ditto.
10007 (E?) Productus, Avicula, &c., ditto.
10008 (E?) Spirifer, Productus, &c., ditto. (7 pieces).
10009 (E?) Cardiomorpha? ditto. (3 pieces).
10010 (E?) Aviculopecten, ditto.
10011 (E?) Cardiopsis? ditto.
10012 (E?) Imperfect fossils, ditto.
10013 (E?) Spirifer & Rhynchonella, ditto.
10014 (E?) Laminated SS. ditto.
10015 (E?) Spirifer, &c., ditto.
10016 (E?) Cardiopsis? Meadville, W. end of Cussewago bridge.
10017 (E?) Spirifer, &c., ditto.
10018 (?) Crinoid, etc., 1 mile S. of Meadville (loose.)
10019 (?) Bryozoa, Evansburg, outlet of Conneaut Lake (loose).
10020 (E?) Imperfect fossils, Spring Corners, 2½ miles N. of Conneautville.
10021 (E?) Spirifer, &c., ditto.
10022 (E?) Rhynchonella, ditto.
10023 (E?) Straparollus, ditto.
10023 Ditto.
10024 (E?) Spirifer carteri, ? ditto.
10024 Ditto.
10025 (E?) Orthoceras, ? ditto.
10026 (E?) Orthis michelini, ditto.
10027 (E?) Spirifer, Rhynchonella, &c., ditto (20 pieces).
10028 (?) Orthoceras and matrix, ? Linesville (loose).

10029 (E?) Spirifer and plants, Little's Corners.
10030 (E?) Orthoceras, 2½ miles south of Little's Corners.
10031 (D?) Spirifer, Platyceras, &c., 1½ miles S. of Cochranton (loose), 5 pieces.
10032 (D?) Lingula, &c., Shaw's Landing (loose).
10033 (D?) Discina, ditto.
10034 (D?) Imperfect fossils, ditto.
10035 (D?) Crinoids, &c., 1 mile N. E. of Little Cooley (loose).
10036 (D?) Spirifer, ditto (loose).
10037 (D?) ? ditto (loose).
10038 (D?) Productus, 1 mile W. of Townville (loose).
10039 (C?) Rhynchonella in yellow SS., S. of Townville (loose).
10039 Ditto.
10040 (C) Fossils in conglomerate, Bates Hill, 1¼ miles S. E. of Sparta.
10040 Ditto.
10041 (D) Spirifer and Rhynchonella, ditto (2 pieces).
10042 (D) Productus, ditto.
10043 (D) Productus and Rhynchonella, ditto (10 pieces).
10044 (?) Murchisonia ? 1 mile S. of Sparta (loose).

Shells from Erie county.

10045 (F) Rhynchonella in gray SS., Middleton quarry, 3½ miles N. W. of Union City (I³, p. 66).
10046 (do.) Spirifer in conglomerate, ditto.
10046 Ditto.
10047 (do.) ? ditto.
10048 (do.) Productus, spirifer, rhynchonella, etc., ditto.
10049 (do.) Rhynchonella, ditto (50 fossils).
10050 (do.) Spirifer, Productus, &c., ditto (7 pieces).
10051 (do.) Spirifer, Rhynchonella, &c, LeBoeuf quarry, 3 miles W. of Union City (I³, p. 67).
10052 (do.) Spirifer and fucoids, ditto.
10053 (do.) Spirifer, ditto.
10054 (do.) Strophomena, ditto.
10055 (do.) Imperfect fossils, ditto.
10056 (do.) ? ditto.
10057 (do.) Spirifer, &c., ditto.
10058 (do.) Spirifer and Rhynchonella in conglomerate, ditto (7 pieces).

10059 (do.) Rhynchonella, ditto (25 fossils).
10060 (do.) Rhynchonella in cong., Doolittle quarry, 3½ miles N. E. of Union City.
10060 Ditto (I^3, p. 66).
10061 (do.) Rhynchonella in cong., Blakesley quarry, 3 miles S. of Wattsburg (I^3, p. 65).
10061 Ditto.
10062 (do.) Spirifer in conglomerate, ditto.
10063 (D) Porcellia nodosa? 2 miles S. of Concord (3 pieces).
10064 (D) Spirifer, productus, crinoids, &c., ditto.
10065 (D) Productus, 2¾ miles S. of Concord.
10065 Ditto.
10066 (?) Leiorhynchus? Corry (loose).
10067 (?) Spirifer, &c., ditto (3 pieces).
10068 (F) Spirifer, &c., ravine 1 mile E. of Middleboro', at top of falls (Q^4, p. 265).
10069 (do.) Rhynchonella, ditto.
10070 (do.) Aviculopecten, ditto (loose).
10071 (do.) Spirifer alta? ditto (loose).

Shells from Venango county.

10072 (C) Conularia, Bell quarry, Franklin.
10073 (C) Hemipronites crenistria, &c? ditto.
10074 (C) Gasteropod, ditto.
10075 (C) Orthoceros, ditto.
10075 Ditto.
10076 (C) Discina, ditto.
10076 Ditto.
10076 Ditto.
10077 (C) ? ditto.
10078 (C) ? ditto.
10079 (C) ? ditto.
10080 (C) Hemipronites crenistria, &c., ditto.
10081 (C) Allorisma, ditto.
10082 (C) Gasteropod, ditto (3 pieces).
10083 (C) ? ditto.
10084 (C) Shells and fish teeth, Middle quarry, Franklin.
10085 (C) Hemipronites crenistria, ditto.
10085 (C) Hemipronites crenistria? ditto.
10086 (C) Discina, ditto.

10087 (C) Discina, Middle quarry, Franklin.
10088 Ditto.
10089 Ditto (8 pieces).
10090 (D) Concretions with fossils, RR. cut ½ mile E. of Foster's station (4 concretions).
10091 (D) Pebbles and concretions, ditto.
10092 (D) Discina, ditto (7 pieces).
10093 (D?) Strophomena, Scrubgrass (loose).
10094 (D) Discina, bed of Hydrick Creek, 2¾ miles N. W. of Utica.
10095 (D) Straparollus, McClintockville, on Oil Creek.
10096 (D) Grammysia? Funkville, ditto.
10096 Ditto.
10097 (D) Leptæna, ditto.
10098 (D) Straparollus, &c., Petroleum Centre, ditto.
10098 Ditto.
10098 Ditto.
10099 (D) Productus? ditto.
10100 (D) Gasteropod, ditto.
10100 Ditto.
10101 (D) Aviculopecten, ditto.
10101 Ditto.
10102 (D) Discina, Productus, &c., ditto (5 pieces).
10103 (D) Orthoceras? imperfect, ditto.
10104 (D) Hemipronites crenistria? mouth of Bull Run, ditto.
10105 (D) Spirifer, 1½ miles N. of Miller farm on Oil creek.
10105 Ditto.
14106 (D) Lingula. ditto.
10106 Ditto.
10107 (D) Avicula, ditto.
10108 (D) ? ditto.
10109 (D) Aviculopecten, 1 mile N. of Miller farm, ditto.
10109 Ditto.
10110 (D) Leptaena, ditto.
10111 (D) Impression of plant, ditto.
10112 (D) Productus, ditto.
10112 Ditto.
10112 Ditto.
10112 Ditto. (3 pieces).

10113 (D) Spirifer, Shaffer farm, 1 mile N. of Miller farm, on Oil creek.
10114 (D) Spirifer & Productus, ditto.
10115 (D) Hemipronites crenistria, ditto. (2 pieces).
10116 (D) Lingula, ditto.
10117 (D) ? ditto.
10118 (D) ? ditto.
10119 (D) ? ditto.
10120 (D) ? ditto.
10121 (D) Lingula, &c., ½ mile S. of Oil City, Slate Run (4 pieces).
10122 (D) Rhynchonella, &c., ditto. (6 pieces).
10123 (D) Productus? Junction of Pine creek with Oil creek, just over the Venango line in Crawford Co., (2 pieces).
10124 (D) Leptaena, &c., ditto.
10125 (D) Allorisma, &c., ditto.
10126 (D) Lingula, &c., ditto.
10126 Ditto.
10126 Ditto.
10127 (D) Crinoids, &c., ditto.
10128 (D) Spirifer, &c., ditto.
10129 (D) Discina, ditto.
10130 (D) ? ditto.
10131 (D) Gasteropod, &c., ditto.
10132 (D) Pleurodyctium? ditto.
10133 (D) Lingula, plank road crossing of Pine creek, ditto.
10133 Ditto.
10133 Ditto.
10133 Ditto.
10133 Ditto.
10134 (D) Avicula, Miller farm, Oil creek.
10135 (D) Aviculopecten? ditto.
10136 (D) Lingula, &c., ditto.
10137 (D?) Spirifer, 3½ miles N. W. of Pleasantville (loose).
10138 (D?) ? ditto.
10139 (D) Discina, 2½ miles N. W. of Pleasantville, McKee Hill.
10140 (D) ? Ditto.
10141 (A?) Schizodus? 1 mile N. W. of Pleasantville (loose).

10142 (A?) Gasteropod, 1 mile N. W. of Pleasantville, (loose).
10143 (?) Spirifer, &c., ditto. (6 pieces).
10144 (A?) Avicula? Pleasantville (loose).
10145 (B?) ? 1 mile N. of Pleasantville (loose).
10145 Ditto.
10145 (B?) Strophodonta, ditto.
10146 (D) Discina, 3 miles N. E. of Pleasantville.

Shells from Warren county.

10147 (?) Yellow SS. curiously marked. Warren borough (loose).
10148 (E?) Dark SS. with fossils, ditto.
10149 (E?) Avicula, &c., 1 mile E. of Warren.
10150 (E?) Lingula, &c., ditto.
10151 (E?) Orthoceras, ditto.
10152 (D) Spirifer, &c., 2 miles E. of Warren.
10152 Ditto.
10153 (D) Spirifer, &c., ditto.
10154 Ditto.
10155 (C) Spirifer in conglomerate, 2½ miles E. of Warren.
10156 (C) Pleurodyctium? in cong., Quaker Hill, near Singular Rocks.
10156 Ditto.
10156 Ditto.
10157 (C)? Ditto.
10158 (?) Archemedes? in yellow SS., Warren (loose).
10158 Ditto.
10158 Ditto.
10158 Ditto.
10159 (E?) Archimedes? 3½ miles N. W. of Warren, Wm. Smith's, 6 pieces (I⁴, p. 318).
10160 (E?) Orthoceras, ditto.
10161 (E?) Avicula, ditto. (4 pieces).
10162 (E?) Cypricardia, ditto. (2 pieces).
10163 (E?) Spirifer, ditto.
10163 Ditto.
10163 Ditto.
10164 (?) Leptæna, spirifer, &c., ¾ mile E. of Russelburg (loose).

10165 (?) Strophomena, spirifer, &c., ¾ mile E. of Russelburg (loose).
10166 (?) Spirifer, ditto.
10167 (?) Productus, crinoid, &c., ditto.
10168 (?) Spirifer, crinoid, &c., ditto.
10169 (?) ? 1½ miles N. E. of Russelburg (loose).
10170 (?) ? Jackson Run, 7 miles N. W, of Warren (loose).
10171 (E) Spirifer and Productus, Hemlock Run, 4 miles E. of Warren (3 pieces).
10172 (E) Sanguinolites? &c., Great Bend (I', p. 302).
10172 Ditto.
10172 Ditto.
10172 Ditto.
10173 (E) Allorisma? ditto.
10174 (E) ? ditto.
10175 (E) Lingula? 1 mile N. of Great Bend.
10176 (E) Grammysia, ditto.
10177 (E) Rhynchonella, &c., ditto.
10178 (?) Spirifer, Rhynchonella, &c., Kinzua village (loose).
10179 (?) Spirifer, ditto.
10180 (?) ? ditto.
10181 Ditto.
10182 Ditto.
10183 Ditto.
10184 (?) Spirifer, Grammysia, &c., ditto. (6 pieces).
10185 (?) Spirifer in conglomerate, ditto.
10186 (?) Orthoceras in conglomerate, ditto.
10187 (?) Orthoceras, ditto.
10188 (E) Spirifer, ½ mile S. of Kinzua village (I', p. 303—No. 9 of section).
10188 Ditto.
10188 Ditto.
10188 Ditto.
10189 (E?) Spirifer and Rhynchonella, ¼ mile E. of Kinzua village (loose).
10190 (E?) Leptæna, ditto.
10191 (E?) Rhynchonella, ditto.
10191 Ditto.
10192 (?) Spirifer and Rhynchonella, Warren borough (loose).
10192 Ditto. (20 pieces).

10193 (?) Spirifer, river bank, S. of Warren (loose).
10194 (?) Spirifer, Productus, &c., ditto. (4 pieces).
10195 (?) Spirifer, &c., 1 mile N. E. of Warren (loose).
10196 (E) Crinoids, &c., 1½ miles N. of Warren, E. side, Conewango creek.
10197 (E) Productus, ditto.
10198 (E) Spirifer and crinoids, ditto.
10199 (D) Hemipronites crenistria, &c., hill N. of Warren.
10200 (D) Spirifer, &c., ditto. (10 pieces).
10201 (D) Spirifer, 2 miles N. W. of Warren.
10202 (D) Avicula, ditto.
10203 (C) Crinoids, &c., 3 miles N. W. of Warren, N. Lorees.
10204 (C) Crinoids, 4½ miles N. W. of Warren.
10205 (C) Crinoids and Aviculopecten, ditto.
10206 (E) Greenish grey SS., curiously marked, 1½ miles N.W. of Warren, Asylum quarry.
10207 (E) Spirifer, ditto.
10208 (E) Allorisma? ditto.
10208 Ditto.
10208 Ditto.
10209 (E) Spirifer, &c., ditto, (9 pieces).
10210 (E) Imperfect fossils, R. R. cut, ½ mile N. of Warren.
10210 Ditto.
10210 Ditto.
10201 Ditto.
10211 (E?) Spirifer, Wrightsville, near saw mill.
10212 (E?) ? Ditto.
10212 Ditto.
10213 (E?) Spirifer, &c., ditto.
10214 (E?) Carbonized plants, ditto.
10214 Ditto.
10215 (C) Remains of plants, Jaquays water well, near Pike's Rocks (I^3, p. 24).
10215 Ditto.
10215 Ditto.
10216 (?) Rhynchonella, &c., 2 miles N. of Wrightsville (loose).
10217 (E?) Aviculopecten, &c., in cong. 1 mile N. W. of Wrightsville, near Abbott's mill, at elevation of 1620′ A. T., (loose, 2 pieces).

10218 (E?) Spirifer, &c., in conglomerate, 1 mile N. W. of Wrightsville, near Abbott's mill, at elevation of 1620′ A. T. (loose, 2 pieces).
10218 Ditto.
10218 Ditto.
10218 Ditto.
10219 (F) Aviculopecten, 2 miles E of Sugar Grove, Faichney quarry, 2 pieces, (I⁴, p. 240).
10220 (D?) Aviculopecten, Spring Creek Station.
10221 (D?) ? ditto.
10222 (?) Spirifer & Straparollus, ditto. (loose).
10223 (?) Rhynchonella, ditto.
10224 (?) Orthoceras, 2 miles N. of Spring Creek Station (loose).
10225 (?) Spirifer, &c., ditto.
10226 (?) Productus, 1 mile S. of Columbus (2 pieces, loose).
10227 (?) Avicula, junction of Spring Creek with Big Broken-straw (loose).
10228 (?) Spirifer & Productus, ditto. (20 pieces).
10229 (?) Spirifer carteri, mouth of Dry Run (loose, I³, p. 29).
10230 (?) Ambocelia umbonata? ditto.
10231 (?) Spirifer, &c. ditto. (8 pieces).
10232 (?) Spirifer &c., 1½ miles E. of West Spring Creek P. O., (loose).
10233 Ditto.
10233 Ditto.
10233 Ditto.
10234 (E?) Spirifer & Cardiomorpha, Johnson's Mill, West Spring Creek P. O. (I⁴, p. 255).
10235 (E?) Sanguinolites, &c., ditto.
10236 (E?) Orthoceras, ditto.
10237 (E?) Cardiomorpha, ditto.
10237 Ditto.
10237 Ditto. (9 pieces).
10238 (E?) Spirifer, ditto. (2 pieces).
10239 (E?) Songuinolites, ditto.
10239 Ditto.
10239 Ditto.
10240 (?) Strophomena, Rhynchonella. &c., ½ mile W. of West Spring Creek P. O. (loose).

10241 (C) Orthoceras fragment, 1 mile W. of West Spring Creek P. O. (loose).
10242 (C) Allorisma & Productus, ditto.
10243 (?) Spirifer, 1 mile S. of ditto. (loose).
10244 (D?) Spirifer, 1¼ miles S. of ditto (loose).
10245 (D) Spirifer, &c., Garland quarry, head of tramway.
10245 Ditto.
10246 (E?) Spirifer, &c., Point at Garland (I', p. 259).
10246 Ditto.
10247 (C?) Spirifer, &c., Cotter farm hill, 1½ miles N. W. of Garland quarry.
10247 Ditto.
10248 (E) Spirifer, &c., in cong. Hosmer Run (6 pieces, I', p. 250).
10249 (D?) Aviculopecten, Orthoceras, &c., ¾ mile S. of Pittsfield (loose).
10250 (D?) Orthoceras, Spirifer, &c., ditto.
10251 (D?) Orthoceras, Straparollus, &c., ditto.
10252 (D?) Orthoceras, ditto.
10252 Ditto.
10253 (D?) Spirifer, Straparollus, &c., 1 mile S. of Pittsfield (7 pieces, loose).
10254 (E?) Spirifer, 2 miles N. W. of Pittsfield (I', p. 259).
10255 (E?) Sanguinolites? ditto.
10256 (E) Crinoids, &c., RR. cut, Irvineton.
10257 (E) Productus, &c., ditto.
10258 (E) Spirifer ditto.
10258 Ditto.
10259 (E) Spirifer in SS., 4 miles N. W. of Youngsville.
10259 Ditto.
10260 (?) Spirifer, 2½ miles N. of Pittsfield, (3 pieces, loose).
10261 (D) Strophodonta, &c., 2½ miles N. W. of Pleasantville, McDonald and Robinson farm (I, p. 79, note).
10261 Ditto.
10262 (D) Aviculopecten, ditto.
10262 Ditto.
10262 Ditto.
10263 (D) Productus, Platyceras, Straparollus, &c., ditto.
10264 (D) Spirifer ditto.
10265 (D) Straparollus, &c., ditto.

10265 (D) Straparollus. &c., 2½ miles N. W. of Pleasantville, McDonold and Robinson farm (I, p. 79, note).
10265 Ditto.
10265 (D) Hemipronites crenistria, ditto.
10267 (D) Orthis michelini, &c., ditto.
10268 (D) Athyris?, &c., ditto. (2 pieces).
10268 Ditto.
10269 (D) Spirifer, ditto. (2 pieces).
10270 (D) Productus, &c., ditto.
10270 Ditto. (6 pieces).
10271 (D) Cephalopod, &c., 3 miles N. W. of Pleasantville, Nelson farm, (I, p. 79, note).
10272 (D) Imperfect fossils, ditto.
10273 (D) Crinoids, ditto.
10273 Ditto.
10273 Ditto.
10273 Ditto.—(3 pieces).
10274 (D) Lingula, ditto.—(2 pieces).
10275 (D) ? ditto.
10276 (?) Spirifer, &c., river flat at Tidioute (9 pieces, loose).
10277 (?) Orthoceras, ditto.
10278 (?) ? ditto.—(2 pieces).
10279 (?) Productus. ditto.—(3 pieces).
10280 (?) Spirifer in conglomerate, ditto.—(4 pieces).
10281 (?) Rhynchonella in cong., ditto.—(2 pieces).
10282 (?) ? ditto.—(2 pieces).
10283 (D) Spirifer, 1 mile N. of of Tidioute.
10284 (?) Stroparollus, &c., Tidioute creek, 1 mile from river, (6 pieces, loose).
10285 (D) Productus, Economite Hill.
10286 (?) Strophodonta? near Penna. House station (loose).
10286 (?) Productus, ditto.
10287 (E) Spirifer, &c., Tidioute oil shaft (I⁴, p. 344).
10287 Ditto.
10287 Ditto.
10288 (C) Stroparollus, 1 mile N. of New London.
10289 (C) Spirifer, ditto.
10290 (D) Spirifer, on road between Tidioute and Triumph.
10290 Ditto.
10290 Ditto.

10291 (D) Crinoids. Dennis Run below Triumph.
10292 (D) Platyceras, &c., ditto.
10293 (D) Productus, &c., ditto.
10294 (D) Lingula, ditto.
10295 (?) Spirifer, &c. Sills Run road, 3 miles S. W. of Warren (loose).
10296 Ditto.
10297 Ditto.
10298 (?) Straparollus, rhynchonella, &c., ditto.
10299 (?) Orthis michelini, &c., ditto.
10300 (?) Crinoid, ditto.
10301 (C) Productus, &c., Tidioute and Warren road, 6 miles N. E. of Tidioute.
10301 Ditto.
10302 (D) Spirifer, &c., Cedar Oil Co. Well No. 2, lot 635, Cherry Grove, 150' from the surface (I', p. 376).
10302 Ditto.
10302 Ditto.
10303 (?) Rhynchonella, Sanguinolites, &c., ½ mile E. of Sheffield 29 pieces, loose).
10304 ?) Imperfect fossil, hill W. of Sheffield (loose).
10305 (?) Rhynchonella, &c., in conglomerate, 1 mile S. of Barnesville (loose).
10305 Ditto.

Shells from Forest county.

10306 (D) Productus, Orthis michelini, &c., W. side of West Hickory Creek, 1 mile from river.
10307 (D) Platyceras, ditto.
10308 (D) Spirifer, &c., W. bank of Tionesta Creek, ½ mile above Foxburg.
10308 Ditto.
10309 (D) Spirifer, &c., Salmon Creek, 3 miles from Tionesta Creek.
10310 Ditto.

Shells from Elk county.

10311 (?) Spirifer and fish, near depot at Wilcox (loose).
10311 Ditto.
10312 (?) Productus, ditto.

10313 (?) Orthis? RR. ballast near Johnsonburg (loose).
10313 Ditto.
10313 Ditto.
10314 (?) Rhynchonella? &c., ditto.
10315 (?) Orthis, &c., ditto (6 pieces).

Shells from Potter county.

10316 (?) Orthoceras? Fishing Creek, near Stearns'.
10317 (?) Cypricardia? ditto.
10318 (?) Rhynchonella? ditto.
10319 (?) Spirifer, saw mill at Sharon Centre.
10320 (F?) Spirifer, in SS., N. of Fishing Creek.
10321 (F?) Sanguinolites, in SS., ditto.

Shells from McKean county.

10322 (F) Rhynchonella, &c., Bradford, point between E. and West branches.
10323 (F) Allorisma, &c., ditto.
10324 (F) Crinoids, &c., ditto.
10324 Ditto.
10325 (F) Avicula, &c., ditto.
10326 (F) Rhynchonella and Spirifer, ditto.
10327 Ditto.
10328 (F) Grammysia, Bradford, E. side of Tuna.
10329 (?) Rhynchonella, &c., in SS. Bradford, West branch, near "Boss Well" (loose).
10330 Ditto (60 fossils).
10331 (?) Orthoceras in cong., Rodgers' farm, ½ mile S. of Bradford (loose).
10332 (?) Spirifer in cong., ditto (2 pieces, loose).
10333 (?) Orthoceras, &c., 1½ miles S. of Bradford (loose).
10334 (?) Spirifer, ditto.
10334 Ditto.
10334 Ditto.
10335 (B) Carboniferous plants, &c., Dennis Well (2 pieces), dug from Conductor hole (I^3, p. 226).
10336 (?) Aviculopecten, &c., Tarport (loose).
10337 (?) Spirifer, ditto.
10338 (F) Spirifer, &c., at RR. level, Tarport.

10339 (F) Orthoceras, Morrison's dam, North Fork, 1 mile from Sugar Creek.
10340 (F) Spirifer, ditto.
10340 Ditto.
10340 Ditto.
10341 (F) ? ditto.
10342 (C?) Spirifer in cong. on road from Tally Ho, to Swede church, elevation 1870′.
10343 (C?) Imperfect fossils, ditto.
10344 (C?) Avicula, ditto.

Shells from Chautauqua county, N. Y.

10345 (F) Euomphalus, &c., Williams quarry, 4 miles N. of Panama (I^3, p. 64).
10345 Ditto (3 pieces).
10346 (F) Spirifer, ditto (2 pieces).
10347 (F) Cypricardia, &c., ditto.
10347 Ditto (17 pieces).
10348 (F) Spirifer, &c , 2 miles N. of Panama (loose).
10349 (F) Rhynchonella, ? ditto.
10350 (F) Spirifer and crinoids, road between Ashville and Rocky Ridge, near top of hill.
10350 Ditto (4 pieces).
10351 (F) Euomphalus, &c., Ashville quarry (I^3, p. 63).
10351 Ditto.
10351 Ditto.
10352 (F) Spirifer, &c., ditto.
10352 Ditto.
10353 (F) Euomphalus, &c., ditto (8 pieces).
10354 (F) ? ditto.
10355 (F) Cypricardia, ? ditto.
10356 (F) Cypricardia in cong. Panama, Rock City (I^3, p. 59).
10356 Ditto.
10356 Ditto.
10356 Ditto (5 pieces).
10357 (F) Spirifer and Rhynchonella in cong., ditto.
10358 (F) Cypricardia, ditto (40 fossils).
10359 (F) Strophomena and Spirifer, 1½ miles above the falls at Panama, and 20′ above the cong.

10359 (F) Strophomena and Spirifer, 1½ miles above the falls at Panama, and 20′ above the cong.
10360 (F) Spirifer, ditto.
10361 (F) Spirifer and Rhynchonella, ditto (2 pieces).
10362 (F) ? ditto.
10363 (F) ? ditto.
10364 (F) Chonetes, ? &c., Panama, 30′ below cong.
10364 Ditto.
10364 Ditto.
10365 (F) Rhynchonella, &c., ditto.
10365 Ditto.
10366 (F) Euomphalus, &c., ditto.
10367 (F) Avicula, ? ditto.
10368 (F) Allorisma, ? ditto.
10369 (F) Lingula, ditto (2 pieces).
10370 (F) Aviculopecten, &c., Panama (loose).
10371 (F) Rhynchonella, &c., Panama, foot of falls (loose).
10371 Ditto.
10372 (F) Spirifer, &c., 1½ miles N. of Grant Station, 25′ above Panama cong. (8 pieces).
10373 (F) Spirifer, &c., 1 mile S. of Clymer.
10373 Ditto.
10374 (D) Spirifer in grey SS., 1½ miles S. W. of Clymer, Beardsley "grindstone quarry," near the State line.
10375 (F) Spirifer, &c., 2 miles N. of Bemus Point, 150′ above Chautauqua Lake.
10376 (F) Ambocelia umbonata, outlet of Chautauqua Lake, at Dexterville.
10376 Ditto.
10376 Ditto.
10377 (F) Orthis ? &c., ditto.
10377 Ditto.
10378 (F) Spirifer, &c., ditto.
10379 (F) Allorisma ? ditto.
10380 (F) Ambocelia umbonata, &c., VanEvery's, 3 miles E. of Jamestown.
10381 (F) Spirifer, &c., 2 miles from Busti, on road to Jamestown.
10382 Ditto.

10383 (F) Spirifer, &c., hill N. of Maysville.
10384 (F) Rhynchonella, &c., ditto.
10385 (C) Crinoids, Anderson's water well, near Robbins hill (I', p. 335).
10385 Ditto.
10386 (C) Platyceras, ditto (2 pieces).
10387 (C) Orthis ? &c., ditto.
10388 (C) Conglomerate & iron, ditto.
10389 (F) Imperfect fossils in SS. Pope's Rocks, 5 miles E. of Frewsburg (I', p. 180).
10389 Ditto.
10390 (F) Spirifer, &c., at Pope's Rocks (loose).
10390 Ditto.
10391 (F) Avicula, Bone Run, 2 miles from Pope's Rocks (loose),
10392 (F) Spirifer, ditto.

Shells from Cattaraugus county, N. Y.

10393 (F) Spirifer, &c., Salamanca N. of RR.
10394 (F) Euomphalus, ditto.
10395 (F) Spirifer and Crinoids, ditto.
10395 Ditto.
10396 (F) Avicula ? ditto.
10397 (F) Productus, ditto.
10398 (F) Aviculopecten, ditto.
10399 (F) Strophomena and Spirifer, mouth of Saw Mill run, 2¾ miles E. of Red House station at water level.
10400 (F) Spirifer, ditto.
10401 (F) ? 2½ miles E. of Red House station.
10401 Ditto.
10402 (F) Productus, ditto.
10402 Ditto.
10402 Ditto.
10403 (F) Spirifer and Crinoids, Great Valley, S. side of Allegheny river.
10404 (F) Leptaena ? ditto.
10405 Ditto.
10406 (F) Crinoid Stem, ditto.
10406 Ditto.
10406 Ditto.

10407 (F) ? Crinoid Stem, Great Valley, S. side of Allegheny river.
10408 (F) Spirifer, ditto.
10409 (F) Productus, ditto.
10410 (F) Fenestella, &c., 1 mile W. of Great Valley (loose).
10410 Ditto.
10410 Ditto.
10410 Ditto.
10410 Ditto.
10411 (F) Strophomena, &c., ditto.
10412 (F) Orthis ? ditto.
10413 (F) Imperfect fossils, ditto.
10414 (F) Spirifer, Productus, &c., ditto (14 pieces).
10415 (F) Crinoids, &c., Carrollton (loose).
10416 (F) Aviculopecten, ditto (2 pieces, loose).
10417 (F) Spirifer, ditto (2 pieces, loose).
10418 (F) Productus, &c., ditto.
10419 (F) ? ditto.
10420 (F) Aviculopecten ? ditto.
10420 Ditto.
10421 (F) Spirifer, ditto (10 pieces).
10422 (F) ? ditto (10 pieces).
10423 (F) ? ½ mile E. of Carrollton, 100' above depot.
10424 (F) Orthoceras in Congomerate hill N. of Carrollton, (5 pieces, loose).
10425 (F) Crinoids and Spirifer, ditto (4 pieces).
10426 (F) Rynchonella, ditto.
10427 (F) ? ditto.
10428 (F) Productus, quarry near Olean.
10429 (F) ? ditto.
10430 (F) Imperfect fossils, ditto.
10431 Ditto.
10432 Ditto.
10433 (F) Rhynchonella, &c., Herman hill, S. W. of Olean.
10434 (F) Spirifer, ditto (2 pieces).
10435 (F) Imperfect fossils, ditto.
10436 Ditto.
10437 (F) Sandstone curiously marked, ditto.
10438 (F) Aviculopecten, near church at Five Mile Corners.

10439 (F) Avicula, Orthoceras, &c., Five Mile creek, 1½ miles N. of Allegany (12 pieces, loose).

Shells from Allegany county, N. Y.

10440 (F) Crinoids, &c., at RR. bridge over Van Campen creek, Belvidere.
10440 Ditto.
10441 (F) Orthonota ? ditto.
10441 Ditto.
10441 Ditto.
10442 (F) Aviculopecten ? ditto.
10443 (F) ? ditto.
10444 (F) Spirifer, ditto.
10444 Ditto.
10444 Ditto.
10445 (F) Productus and Spirifer, ditto (5 pieces).
10446 (F) Rhynchonella, ditto.
10447 (F) Spirifer, &c., Vandemark creek, near Scio.
10447 Ditto.
10448 (F) Crinoids, &c., ditto.
10449 (F) Fenestella, &c., ditto.
10449 Ditto.
10450 (Catskill ?) Productus, Wellsville quarry.
10451 (do) Aviculopecten, &c., ditto.
10452 (do) Productus ? 3½ miles S. of Wellsville.
10453 (do) Spirifer, ditto.
10454 (do) Fish, ditto.
10455 (do) Aviculopecten, ditto.
10456 (do) Orthoceras, ½ miles S. of Wellsville (loose).
10457 (F) Spirifer, &c., from rock exposed at water level, W. end of Transit bridge.
10458 (F) Coarse grained SS. ditto.
10459 (F) Spirifer, &c., ditto (16 pieces).

Lime, Marl, &c.

10460 Carbonate of lime, Warren Co., Asylum quarry, 1½
10460 miles N. W. of Warren, deposit in crevices (M³, p. 107).
10461 Carbonate of lime, Warren Co., Clapp farm, 3 miles S.
10461 W. of Tidioute. deposit in oil well (M³, p. 107).
10461 Ditto.

10462 Marl, Crawford Co., near Harmonsburg (M^2, p. 365).
10463 Lime from marl & peat buned together, ditto.
10464 Lime (91 b) ditto.
10465 Lime (91 c) ditto.
10466 Marl, Chautauqua Co., N. Y., from bottom of Cassadaga lake.
10467 Carbonate of lime, Allegany Co., deposited by water from Tarentum well, 5 pieces (M^3, p. 106).
10468 Clay, Crawford Co., overlying the sand containing oil at the gravel pit wells, near Titusville (I^3, p. 421).
10469 Deposit from the inside of a working barrel of an oil well, Watson's flats, Titusville.
10470 Ochrey deposit from the fresh water pipes of oil wells at Pleasantville, Venango Co.
10471 Mineral paint, Small's farm, just N. of Pleasantville borough.

Specimens of Drift.

10472 Pebbles, from shore of Lake Erie, Dunkirk harbor, Chautauqua Co., N. Y. (I^4, p. 191).
10473 Pebbles, from drift bank S. side of Allegheny river, at Warren, Warren Co. (I^4, p. 191.)
10474 Pebbles, near Prospect station, Chautauqua Co., N. Y.
10475 Garnetiferous gneiss, 3 miles N. E. of Mayville, Chautauqua Co., N. Y. (5 pieces).
10476 Conglomerate & SS. Warren Co., ½ mile N. E. of Russelburg.
10477 Weathered drift, Warren Co., 2 miles N. W. of Lottsville, showing the effects of weathering while lying in a muck swamp (8 pieces).
10478 Impression of *Crustacean*? Warren Co., Glade.
10479 Pebbles, &c., Warren Co., junction of Dry Run with Big Brokenstraw (I^3, p. 19).
10480 Pebbles, &c., Warren Co., bed of Big Brokenstraw at Irvineton.
10481 Pebble with *Gasteropod*, ditto.
10482 Erratic, Warren Co., Farnsworth hill, Cherry Grove twp.
10483 Hamilton *fossils*, Venango Co., McGee hill.

10484 Erratics, Venango Co., Pleasantville hill (2 pieces).
10485 Pebble with *fossils*, ditto.
10486 Pebbles & *fossils*, Venango Co., Allegheny river at President.
10487 Erratic, Venango Co., at Bell quarry, Franklin.
10488 Pebbles, Crawford Co., W. side of Pine creek, near Oil creek.
10489 Erratic, Crawford Co., E. line of Randolph twp.
10490 Erratic, Crawford Co., E. side of Oil Creek Lake.
10491 Erratic, Crawford Co., Mill Run, Meadville.
10492 Erratic, Crawford Co., Shaws Landing.
10493 Erratic, Crawford Co., Cochranton.
10494 Recent conglomerate, Crawford Co., 1½ miles S. of Cochranton (2 pieces).
10495 Erratic, Crawford Co., 1 mile E. of Jamestown.
10496 Pebbles, &c., Venango Co., Allegheny river at Scrubgrass.
10497 Pebbles, &c., Allegheny Co., Allegheny river at Sewickley.

Specimens of Slickensides.

10498 Slickensides in conglomerate, Cattaraugus Co., N. Y., hill N. of Carrollton.
10499 Ditto. Chaut. Co., N. Y., Blakesley quarry, 3 miles S. of Wattsburg (I^3, p. 65).
10500 Slickensides in coal, Warren Co., Quaker hill coal bank.
10501 Slickensides in conglomerate, Warren Co., Sill's Run, 3 miles S. W. of Warren.
10502 Ditto. Warren Co., Irvine run, 3 miles N. W of Irvinetown (I^4, p. 263).

Large Specimens.

10503 (D) Impression of *fucoid* ? Chautauqua Co., Co., N.Y., Beardsley's "grindstone quarry," 1½ miles S.W. of Clymer.
10504 (C) Yellow SS., perforated, Venango Co., McGee hill, 2½ miles N. W. of Pleasantville.
10505 (A) Greenish grey SS, Warren Co., near New London, showing the characteristic fracture of carboniferous sandstones.

10506 (E) Cong.. Warren Co., Tidioute oil shaft, spec. of Venango 3d oil sands (I⁴, pp. 196 and 344).
10507 Recent conglomerate, Warren Co., S. of Allegheny river, Warren (cirricuted drift).
10508 (E?) Greenish grey SS., with branching *fucoid*? Warren Co., 2½ miles W. of Warren.
10509 (D?) Perforated SS., Warren Co., Warren (loose).
10510 (E) Wave marks, Warren Co., 2 miles E. of Warren.
10511 (D) Mass of *fossils* in SS., Warren Co., McDonald & Robinson farm (I, p. 79).
10512 (A?) Stigmaria, Forest Co., 3 miles E. of Tionesta (loose),
10513 (A) Cast of fucoid? Warren Co., Fagundus hill.
10514 (A) Caulopteris, &c., Venango Co., 1 mile W. of Pleasantville.
10515 Helderberg corals, Ontario Co., N. Y., 1 mile W. of Canandaigua (loose).

Specimens from Oil Wells.

10516 Gravel from Anchor Oil Co., well No. 1, Eagan farm, Clarendon; at depth of 208′ (I⁴, p. 353).
10517 Gravel from Smith well, Lottsville; at depth of 15′ (I⁴, p. 233).
10518 Ditto, from 250′ to 450′.
10519 Ditto, from the dump heap after well was abandoned.

Sandstones and Conglomerates obtained after torpedoing.

10520 Butler 4th sand (top shell) Armstrong well No. 1, Brady's Bend Iron Co., Armstrong Co.
10521 Butler 4th sand (impression of shells), ditto.
10522 Ditto. (oil streak), ditto.
10523 Butler 4th sand, Evans' well No. 8, Dougherty farm, Petrolia, Butler Co., Sept., 1876; 85 bbl. well.
10524 Sandstone, showing curve of drill hole, Dougherty well No. 2; Butler Co., at 500′ (I³, p. 196).
10525 Mountain sand, ditto.
10526 Oil sand, Nelson well, Greece City, Butler Co., June, 1875.
10527 Venango, third sand, Galena lease, well No. 14, Plummer tract, Bullion, Venango Co., 6 pieces.

10528 Sandstone with coal, Wynkoop and Underwood well, Mendenhall farm, Edenburg, Clarion Co., said to have come from the Clarion third oil sand, after torpedo.

10529 Venango third sand, Schmick well, Irvin farm, Warren Co. (I^2, p. 184).

10530 Recent fine grained conglomerate, Gravel pit oil wells, E. Titusville, Crawford Co. (I^3, p. 421).

Bradford Oil Sands.

10531 Bradford oil sand, Buchanan Bros., Hooker farm, well No. 1, State Line Corners, Tuna Valley, at 1090′ ± ; 12 pieces.

10532 Bradford oil sand, Hartford well, No. 1, Welsch farm, Tarport, McKean Co.; 8 pieces.

10533 Shell above oil sand, ditto. 7 pieces.

10534 Bradford oil sand, RR. well on RR. land near depot at Tarport, 8 pieces.

10535 Bradford oil sand, Harsh well No. 1, Cole lot, Tarport, 15 pieces.

10536 Bradford oil sand, Germer well No. 2 (a large well), Worthman farm, Oil Valley, McKean Co., torpedoed at 1365′: 6 pieces.

10537 Mixed rock, ditto. 6 pieces,

10538 "Top shell" Bradford sand, Germer No. 3, Worthman farm, obtained while drilling at 1344′.

10539 Bradford oil sand, ditto—from 1352′ to 1360′.

10540 "Bottom shell" Bradford sand, ditto—at 1366′.

10541 Last of sand, junction with slate, ditto—at 1392′.

10542 Bradford oil sand, Germer well, Glycerine Hollow, S. of Bradford; 2 pieces.

10543 Bradford oil sand, Whitney and Wheeler No. 2, Slocum farm, McKean Co.

10544 Bradford oil sand, Lamb and Hawkins' wells, Moody lands, near Davis' switch, McKean Co.

10545 Bradford oil sand, well No. 2, lot No. 106, Barse tract, Otto township, McKean Co., obtained by E. B. Morian, Dec. 23, 1881, after explosion of 60 quart torpedo, at a depth af 1570′; weight 2½ lbs.

Allegany County, N. Y., Oil Sands

10546 Allegany oil sand, Triangle well No. 3, Alma township, Allegany Co.; torpedoed at 1220'.

10547 Allegany black oil sand, Boyle well No. 1, near Richburgh, 3 pieces.

10548 Allegany oil sand, Campbell well No. 3, near Allentown, Alma township, Allegany Co.

Sand Pump Specimens.—Beaver and Allegheny Counties.

10549 Economy Well, No. 2, Beaver Falls, Beaver Co., 59 bottles, for full description of spec. (I^3, p. 401).

10550 Fetterman Well (gas), Beaver Co., 15 large bottles (I^4, p. 142).

10551 Boyd Hill Well, Pittsburgh, 43 numbers, 67 bottles (I^3, p. 398).

10551 Boyd Hill Well, box of duplicate sand pumpings in bags.

10552 Graff, Bennett & Co. Well, Tarentum, Allegheny Co,, 10 bottles (I^3, p. 405).

Armstrong County.

The drillers preserved specimens from Brady's Bend Iron Company's wells, Nos. 5, 6 and 7, by putting wet sand pumpings in large-mouthed bottles. Well No. 5, was completed in April, 1870, No. 6 in April, 1871 and No. 7 in March, 1871. In December, 1880, when these bottles came into possession of the Survey, some of their contents were still wet but badly oxidized, while others were dried and consolidated so that they had to be dug out with a chisel. The specimens from Well No. 6 furnish a good illustration of the manner in which improperly preserved specimens may deceive observers outside of the oil regions who have occasion to study them. Wherever there was grit enough in the rocks to abrade the drill, the specimens have lost their natural appearance and changed color so that they would hardly be recognized even by those most familiar with them. The records of these wells have not been published, but the depth of each specimen is plainly marked on the bottle containing it, and the set is valuable mainly for the purposes of illustrating the peculiarities above mentioned.

10553 Brady's Bend Iron Co. Well No. 5, Allegheny St. near the river, 36 bottles.

10554 Brady's Bend Iron Co. Well No. 6, Whiskey Run, 231 numbers; 279 bottles, specimens 5 to 33 have been sifted and duplicated—fine sand in one and coarse sand in the other—to show how differently they appear. Specimens 210 to 228, ditto.

10554 Brady's Bend Iron Co. Well No. 6, box of duplicate sand pumpings in bags.

10555 Brady's Bend Iron Co. Well No. 7, Whiskey Run, near Queenston, 45 bottles.

Butler County.

10556 Sutton Well No. 4, Butler Co., 79 bottles (I^3, p. 194). For original notes see note book on file marked "Well Records," page 2.

10557 Dougherty Well No. 2, 51 bottles (I^3, p. 196, and notes page 8).

10558 Evans well, No. 21, 63 bottles (I^3, p. 198 and notes p. 14).

10559 Hazelwood well No. 21, 47 bottles (I^3, p. 200 and notes p. 20).

10560 Morehead and Lardin, No. 2, 46 bottles (I^3, p. 202 and notes p. 26).

10561 Kerr well No. 6, 42 bottles (I^3, p. 204 and notes p. 32).

10562 Bennett well No. 1, 6 large bottles (I^2, p. 245).

10563 Jennings well, Wiles' farm, near Petrolia, 2 bottles, 4th SS.

10564 Prentice well, Duffey farm, N. of St. Joe, 2 bottles, 4th SS.

10565 Guffey well, Fry farm, 1 bottle.

10566 Sheakley well, Petrolia, 1 bottle, 3d SS. after torpedo.

10567 Jennings well No. 5, Steele farm, near Petrolia, 1 bottle, 2d SS.

10568 Hazelwood Oil Co., No. 7, McKinney farm, 1 bottle, 3d SS. at 1485'.

10569 Vandergrift & Co., No. 7, McGarvey farm, 1 bottle, 4th SS. at 1547'.

10570 H. L. Taylor & Co., No. 15, McCafferty farm, 1 bottle, 4th SS. at 1655'.

10571 H. L. Taylor & Co., No. 3, Garner farm, 1 bottle, 4th SS.
10572 Nelson well, Greece City, 1 bottle, 4th SS. after torpedo.
10573 Evans well No. 21, Dougherty farm, 1 bottle, after torpedo.
10574 Forsyth well, Daubenspeck farm, near Millerstown, 1 bottle oil sand, after torpedo.
10575 Mechlin well, Millerstown, 1 bottle of "50′ rock."

Clarion County.

10576 Burndred well No. 4, 1 mile S. W. of Edenburg, 62 bottles (I^3, p. 214 and notes pp. 42 and 46).
10577 Columbia Oil Co. well No. 19, ¾ mile S. E. of Edenburg, 101 bottles (I^3, p. 216 and notes p. 54).
10578 McGrew Bros. well No. 4, 1 mile S. E. of Edenburg, 92 bottles (I^3, p. 218 and notes p. 66).
10579 Wynkoop & Co., No. 1, Mendenhall farm, Edenburg, 2 bottles; top 3d SS. 1069′.
10580 Goss Bros. No. 1, Best farm, Edenburg, 1 bottle, 3d SS., at 1242′; good well.
10581 Sweetzer No. 2, near Goss', 1 bottle, 3d SS.
10582 D. Lamb & Co., No. 2, D. Keizer farm, Elk City, 1 bottle, 3d SS.
10583 Chambers well, Paul Black farm, E. of Elk City, 1 bottle, 3d SS.
10584 Kern No. 1, Wood farm, S. E. of Edenburg, 1 bottle, 3d SS.
10585 Cramm & Goal No. 1, ditto, 1 bottle, 3d SS.
10586 Siggins No. 1, Hummel farm, near Pickwick, 1 bottle, 3d SS.
10587 Kramer No. 1, Karmer farm, 1 bottle, 3d SS.
10588 Allshouse and Painter well, Ritt's farm, 1 bottle, 3d SS.
10589 Johnson well, Johnson farm, Elk Twp., 1 bottle, 3d SS. at 1050′.

Venango, Crawford, Warren and Forest Counties.

10590 Linden well No. 1, Venango Co., 37 bottles (I^4, p. 59).
10590 Linden well No. 1, box of duplicate specimens in bags.
10591 Harsh well No. 1, Venango Co., 25 bottles (I^4, p. 58).
10591 Harsh well No. 1, box of duplicate specimens in bags.

10592 Rainbow well No. 1, Hebert farm, Pleasantville, 11 bottles, 5th SS.

10593 Hebert well No. 16, Hebert farm, Pleasantville, 10 bottles, ditto.

10594 Dolly Varden well, Hebert farm, Pleasantville, 4 bottles, ditto.

10595 Horseshoe well, or Carll No. 1 (I^2, p. 30), 14 bottles, ditto.

10596 Jesse Johnson well, A. W. Brown lot, Pleasantville, 3 bottles No. 1, 2d SS., producing a little oil; No. 2, stray SS., a show of oil; No. 3, "5th SS.," poor and dry.

10597 McLaughlin well No. 1, Forest Co., 2 bottles, 4th SS. (I^4, p. 76).

10598 Shamburg well No. 5, Fogle farm, near West Hickory Creek, Forest Co., 3 bottles, "4th SS.," 777′ to 795′.

10599 Woodland Oil Co. No. 1, Warren Co., 21 bottles (I^4, p. 49).

10600 Brown and Siggins No. 1, Warren Co., 13 bottles (I^4, p. 51).

10601 Byron well, Six Corners, Venango Co., 2 bottles oil sand.

Large Bottles.

10602 Brown and Irvin No. 2, Walter Scott tract, Enterprise, Warren Co., 1 bottle, 3d SS.

10603 Benedict No. 2, Walter Scott tract, Enterprise, Warren Co., 1 bottle, 3d SS.

10604 Schmick well No. 1, Warren Co., 1 bottle, 3d SS. (I^2, p. 181).

10605 Rallston well, Economite tract, Tidioute, 1 bottle, 3d S

10606 White well, Warren Co., 1 bottle, 1st SS., called "3d SS." in record (I^4, p. 52).

10607 Gravel Pit wells, Warren Co., 1 bottle of sand furnishing oil (I^3, p. 421, &c.).

10608 Fertig well, John Watson farm, Titusville, 1 bottle, 3d SS., dry.

10609 Benson McKelvey & Co., Octave district, S. of Titusville, 1 bottle, 3d SS., after torpedo.

10610 Stewart well, Robinson farm, Octave district, S. of Titusville, 1 bottle 3d SS.
10611 Dickson well No. 1, Venango Co., 1 bottle 3d SS. (see I^2, p. 189).
10612 Thompson well, near the above, 1 bottle 3d SS.
10613 Mary Ann well, Venango Co., 1 bottle 3d SS., after torpedo (I^2, p. 166).
10614 No. 3 well, Clark farm, Shamburg, 1 bottle "4th SS."
10615 Thompson well, Chicago tract near Shamburg, 1 bottle "4th SS."
10616 Scott well No. 1, Mill farm near "National Wells," Venango Co., 1 bottle of "5th or green oil sand," large well.
10617 Fisher well, D. Brown Bros. tract, Pleasantville, 1 bottle, "5th SS," no oil.
10618 McLaughlin No. 1, Cashup, 1 bottle, "4th SS. (I^2, p. 175).
10619 Lindsey well, Franklin, 1 bottle, 1st SS., (I^4, p. 65).
10620 Crawford well No. 7, Bullion, Venango Co, 1 bottle. 3d SS., a very large and enduring well, surrounded by dry holes.
10621 Shirley & Dean well, Bullion, 1 bottle, 3d SS.
10622 "Big Injun well," Henderson farm, 1 bottle, 3d SS. Reported production first day 3,500 barrels.
10623 "Big Medicine" well, Bullion, McCalmont farm, 1 bottle, 3d SS. Production 1,200 barrels per day.
10624 Well at Oil Springs, Canada, specimens of shales above oil rock—at 285′ to 295′.

Warren and Forest Counties.

Sands lying below the Venango Group.

10625 Beatty well No. 1, Warren Co. 17 bottles, (I^4, p. 1).
10626 Logan ditto, ditto, 7 ditto (I^4, p. 29).
10627 Goss, Goal & Haskell well No. 1, Warren Co., lot 558 Meade Twp., 13 bottles.
10628 Cobham well, Warren Co., 5 bottles (I^4, p. 8).
10629 Anderson well No. 1, Warren Co. at Andersons mill, Glade or East Warren, 3 bottles, 3d SS. 595′ to 645′.

10630 Bell well No. 1, Warren Co., Hook farm, Glade, 1 bottle at 644'.

10631 Hoffman well, Warren Co., Hook farm, Glade, 1 bottle at 695'.

10632 Bell well No. 6, Warren Co , Hook farm, Glade, 3 bottles 661' to 707'.

10633 Struthers well, Warren Co., Hook farm, Glade, 1 bottle at 632' (I⁴, p. 4).

10634 Rocknell & Monroe well, Warren Co., Hook farm, Glade, 2 bottles, 365' to 460'.

10635 Nesmith well, Warren Co., Clark farm, 1 bottle at 688' (I⁴, p. 4).

10636 Bell well No. 1, Warren Co., Snyder farm, 1 bottle at 819'.

10637 Watson well, Warren Co., Siggins farm, 1 bottle, 3d SS. dry.

10638 Ainsworth well, Warren Co., Quaker Hill road opposite Beatty farm, 1 bottle of 15' 3d SS., 10 barrel well.

10639 Verback well No. 3, Warren Co., Rankin farm, 1 bottle at 800'.

10640 Campbell well, Warren Co., opposite Beatty, 1 bottle, 702' to 742', dry.

10641 Verback well No. 2, Warren Co., Verback lot, Glade, 2 bottles, 3d SS. at 700'.

10642 Struthers well, Warren Co., N. Warren, 1 bottle at 1835' (I⁴, p. 12).

10643 Hodge Run well, Warren Co., 1 bottle at 1025' (I⁴, p. 30).

10644 Lottsville well No. 1, Warren Co., 9 bottles (I⁴, p. 233).

10645 Rocky Hollow well, Warren Co., 2 bottles 550' to 625' and 750' (I⁴, p. 236).

10646 Turner & Duncan well, Warren Co., 3 bottles 1485', 1500' and 1600' (I⁴, p. 22).

10647 Tolles well No. 1, Warren Co., 1 bottle at 993' (I⁴, p. 20).

10648 Brown Bros. well, Warren Co., 1 bottle at 900'± (I⁴, p. 22).

10649 Smith well No. 1, Warren Co., at Wardwell Ferry, 25 barrel well struck July, 1883. 1 bottle of oil sand.

10650 Brown Bros. well, Warren Co., lot 79, Mead, 1 bottle of oil sand, good well.

10651 Hague well No. 1, Warren Co., Tiona, 1 bottle 3d SS. at 1010'.

10652 Magee & Horton well, Warren Co., 4 bottles oil sand 1402' to 1420' (I⁴ p. 25).

10653 Barnsdall well, Warren Co., lot 635, 1 bottle of oil sand.

10654 Darling well No. 1, Forest Co., on Tionesta creek, 1 bottle of oil sand.

10655 Grandin & Kelly No. 3, Forest Co., Cook lands, 1 bottle of oil sand.

10656 Towler & Hunt No. 4, Forest Co., 41 bottles (I⁴ p. 84).

10657 H. H. C. well, Forest Co., 5 bottles (I², p. 63).

10658 Watsons Deep well, Warren Co., 5 bottles at 1600', 2600', 2625', 2800' and 2850' (I³, p. 154).

10659 Union City well, Erie Co., 21 bottles (I⁴, p. 121).

10660 10th Street well, Erie City, 8 bottles 360' to 650'.

10661 7th Street well, Erie City, 2 bottles 630' to 750'.

Elk County.

10662 Watson well, Elk Co., Johnsonburg station, a large gas well, 2510' deep, drilled in 1877, 32 bottles preserved by Mr. Wm. Kaney, contractor, and presented to Survey July, 1883.

10663 Roy & Archer No. 3, Warrant No. 3788, gas well drilled in 1881, 14 bottles from 2100' to 2300', presented by Mr. G. L. Benton.

Bradford Specimens.

Specimens No. 1 to 79 were preserved by Messrs. Harsh & Shreiber principally from their own wells drilled near Bradford in 1876 and 1877. They were presented to the Survey November 9, 1877, by Mr. Geo. V. Foreman, who had then purchased the wells. The notes were copied from Messrs. Harsh & Shreiber's books by Mr. Arthur Hale, in January, 1878. Old numbers on bottles in brackets.

10664 (1) Walcott well No. 1, Walcott farm, Tuna Valley, just N. of Penna. State line, spec. at 1035'; top 3d SS. 1032', bottom 1044'; depth of well 1071'.

10664	(2)	Walcott well	No. 2,	spec. at	1037', found a black sand at 1018' and 3d SS. at 1035'.
10665	(3)	Ditto.	No. 3,	spec. at	1123'; top SS. 1122'; depth of well 1147; gas at 843'; black sand at 1100'.
10666	(4)	Ditto.	No. 4,	spec. at	1123'; top SS. 1123'; bottom 1135'; depth 1158'; first oil at 1123'.
	(5)	Ditto.		spec. at	1125'.
	(6)	Ditto.		ditto.	1133'.
10667	(7)	Ditto.	No. 5,	ditto.	1071'; top SS. 1068'; bottom 1078'; depth 1098'; oil 1071'.
	(8)	Ditto.		ditto.	1075'.
	(9)	Ditto.		ditto.	1077'.
10668	(10)	Ditto.	No. 6,	ditto.	? From black SS. above 3d.
	(11)	Ditto.		ditto.	1079'; top SS. 1072'; bottom 1080'; depth 1103'.
10669	(12)	Ditto.	No. 7,	ditto.	1028'; top SS. 1027'; bottom 1036'; depth 1056'; oil 1028'.
	(13)	Ditto.		ditto.	1034'.
10670	(14)	Ditto.	No. 8,	ditto.	1096'; top SS. 1093'; bottom 1102'; depth 1122'; oil 1096'.
	(15)	Ditto.		ditto.	1099'.
	(16)	Ditto.		ditto.	1102'.
10671	(17)	Ditto.	No. 9,	ditto.	1134'; top SS. 1122'; bottom 1139'; depth 1155'; oil 1124'.
	(18)	Ditto.		ditto.	1139'.
10672	(19)	Ditto.	No. 11,	ditto.	1034'; top SS. 1034'; bottom 1046'; depth 1046'.
	(20)	Ditto.		ditto.	1038'.
	(21)	Ditto.		ditto.	1041'.
10673	(22)	Ditto.	No. 12,	ditto.	? "3d SS."

10674	(23)	Beardsley well	No. 4, Beardsley farm, Tuna Valley, adjoining State line, spec. at 1033', top SS. 1033', bottom 1047', shale oil at 900'. Well No. 1 had slush oil at 720', and 3d SS. at 1031'.
	(24)	Ditto.	spec. at 1038'.
	(25)	Ditto.	ditto. 1042'.
	(26)	Ditto.	ditto. 1047'.
10675	(27)	Beardsley well,	No. 5, specimen at 1053'.
	(28)	Ditto.	ditto. 1056'.
	(29)	Ditto.	ditto. 1060'.
10676	(30)	Little well,	No. 1, Little farm, Tuna Valley, S. of Limestone; spec. at 1061'; top SS. 1043', bottom 1084', gas at 504'. 2d SS. 675' to 774', oil at 707', 712' and 1050'.
10677	(31)	Ditto.	No. 2, spec. at 1052', top SS. 1039', bottom 1072', depth 1091. 2nd SS. 672' to 675', salt water 700', oil 709' to 1045', slate 1072'.
	(32)	Ditto.	Spec. at 1065'.
10678	(33)	Ditto.	No. 3, ditto. 1056', top SS. 1045', depth of well 1093'.
10679	(34)	Ditto.	No. 4, ditto. 1049'; top SS. 1045'; bottom 1080'; depth 1101'.
	(35)	Ditto.	ditto. 1052'.
	(36)	Ditto.	ditto. 1054'.
	(37)	Ditto.	ditto. 1057'.
	(38)	Ditto.	ditto. 1065'.
	(39)	Ditto.	ditto. 1070'.
	(40)	Ditto.	ditto. 1080'.
10680	(41)	Ditto.	No. 5, ditto. 1045'.
	(42)	Ditto.	ditto. 1059'.
	(43)	Ditto.	ditto. 1061'.
10681	(44)	Ditto.	No. 6, ditto. 1051'; top SS. 1050'; bottom 1091'; depth 1091'.

10681	(45)	Little well No 6, spec. at 1054'.
	(46)	Ditto. ditto. 1058'.
	(47)	Ditto. ditto. 1062'.
10682	(48)	Howe well, No. 1, ditto. 1049'; top SS. 1041'; bottom 1073'; depth 1073'; shale oil at 798'; slate at 1055'.
	(49)	Ditto. ditto. ? "3d SS."
	(50)	Ditto. ditto. ? "3d SS."
10683	(51)	Burlingham well, No. 1. "Flat Iron tract," 3 miles S. of Olean, specimen at 955'.
	(52)	Ditto. ditto. 1140' to 1200'; "2d sand."
10684	(53)	Wagner well, No. 1, specimen at 1048'; top SS. 1040'; bottom 1074'; depth 1092'.
	(54)	Ditto. specimen at 1070'.
10685	(55)	Mason well, No. 1, specimen at ?. "Top 3d sand."
	(56)	Ditto. ditto. ?. "25' in 3d sand."
10686	(57)	Babcock well, No. 2, Babcock Mill, Foster Brook, spec. at ? "Top of 3d sand."
10687	(58)	Cole well, No. 1, Cole lot, Tarport, spec. at 3d SS.; top SS. 1013'; bottom 1034'; oil at 680', 930 and 1015'.
10688	(59)	McMurray well, No. 1, R. McMurray farm, Foster Brook, spec. at ? "Top 3d SS."
	(60)	Ditto. spec. at ? "20' in 3d SS."
10689	(61)	Ditto. J. McMurray farm, Foster Brook, spec. at 1070'.
	(62)	Ditto. spec. at 1085'.
	(63)	Ditto. ditto. 1090'.
	(64)	Ditto. ditto. 1100'.
10690	(65)	Germer well, No. 1, Burton lot, De Golier, spec. 1185' to 1194'.
	(66)	Ditto. spec. 1194' to 1210'.

10691 (67) Renner well, No. 1, Renner farm, Limestone, Cattaraugus Co., N. Y.; spec. at 1366'; top SS. 1366'; bottom 1377'; depth 1403'; 2d SS. at 905'; stray SS. at 1353' to 1356'; oil at 1373'.

(68) Ditto. spec. at 1373'.

(69) Ditto. ditto. 1377'.

10692 (70) Renner well No. 2, spec. at 1318' to 1325'; top SS. 1313'; bottom, 1325' depth, 1349; oil, 1318.

10693 (71) Ditto. No. 4, spec. at 1410' "stray SS."

(72) Ditto. ditto. ditto. 1415' "stray SS."

(73) Ditto. ditto. ditto. 1420' "stray SS."

(74) Ditto. ditto. ditto. 1426,' top 3d sand.

(75) Ditto. ditto. ditto. 1428'.

(76) Ditto. ditto. ditto. 1430'.

(77) Ditto. ditto. ditto. 1432'.

(78) Ditto. ditto. ditto. 1436'.

(79) Ditto. ditto. ditto. 1438'.

10694 (80) Hawkins & Co. No. 1, Neuer farm, 1 mile N. W. of Alton, unproductive, spec. at 2042; top SS. 206; bottom 2063; depth 2063.

(81) Ditto. ditto. spec. at 2050'.

(82) Ditto. ditto. ditto. 2054'.

(83) Ditto. ditto. ditto. 2058'.

(84) Ditto. ditto. ditto. 2063'; salt water at 2054'.

10695 (85) Hartford well No. 1, Welch farm, Tarport, from "Anchor" to tubing.

(86) Ditto. "Floating sand" pumped with the oil.

10696 (87) Germer well No. 1, Glycerine hollow, S. of Bradford, spec. 1300' to 1310', third sand.

(88) Ditto. spec. 1310' to 1320'.

10697 (89) Germer & Co. No. 1, De Golier, 18' in 3d sand.

10698 (90) Enterprise Transit Co., Raub farm, Bradford, 12' in 3d sand.

10699 (91) Prentice well No. 1, Tuna flats, Bradford, 3d sand, 175 bbl well.
10700 (92) Gillespie & Taylor well, Buchanan farm, State line, 3d SS. at 1065.
10701 (93) Henchey farm well, ½ mile N. of Tarport, 3d sand.
10702 (94) Prentice well No. 2, Gilbert farm, Tuna flats, State line, an old well deepened in 1878, spec. at 1540', a fair sample of all drillings below 3d SS.
(95) Ditto. ditto. sifted (bottom of 3d sand 1040'±).
10703 (96) Prentice well, Foster farm, 3d SS. (proper place 1130') not found in this well, spec. at 1175'.
(97) Ditto. ditto. 1190'.
(98) Ditto. ditto. 1190' sifted.
10704 (99) Fagundus well No. 1, J. Buchanan farm, State line, spec. at 1173', about 25' below 3d SS.
10705 (100) Lapham well, lot 420 Bingham lands, pellets formed by the action of gas in well producing little oil. Brought up in the sand pump when cleaning the well.
10706 (101) Fisher well No. 6, Mack lands, 2½ miles W. S. W. of Bradford, 2d sand, productive.
10707 (102) Ditto. No. 7, spec. 2d SS. 100 barrel well.
10708 (103) Gas well, Rodger' s farm, 2 miles W. S. W. of Bradford, gas brought to city.
10709 (104) Olmstead well No. 2, Sanford farm, 3 miles S. of limestone, Catt Co., N. Y., spec. of "2d SS." "slush oil at 750'" (I⁴, p. 87.)
10710 (105) Emery well No. 1, near Olmstead well, spec. of "1st SS."
10711 (106) Lewis well No. 1, Seward farm, N. of Tarport, spec. at 1100' (I⁴, p. 88).
10712 (107) Bolivar Run well (dry), A. W. Dikeman farm, a short distance N. of Tarport, spec. at 1210'; depth 1210'; "No 3d sand found."
10713 (108) Jackson & Walker No. 2, Kennedy farm, Bradford (I⁴, p. 89).
10714 (109) Emery well, Geiter farm, De Golier, spec. at 630'.

10715 (110) Emery & Patterson No. 1, Toad Hollow, spec. "2d SS." at 725′ ±.
10716 (111) Prentice well, Lewis Run, ditto. ditto. 1020′?
10717 (112) Haskill No. 1, Smethport, spec. 1717′ to 1741′ Seth Backus' version (I⁴, p. 116).
10718 (113) Ditto. No. 2, Smethport, spec. 1771′ to 1781′, per S. Backus.
(114) Ditto. ditto. Smethport, spec. 1781′ to 1789′, per S. Backus.
(115) Ditto. ditto. Smethport, spec. 1789′ to 1797′, per S. Backus.
10719 (116) Red Mill Brook well, N. E. of Clermont, McKean Co., spec. at 1440′ to 1485′, per Seth Backus.
(117) Ditto. spec. at 1485′ to 1510′, ditto.
(118) Ditto. ditto. 1510′ to 1514′, ditto.
(119) Ditto. ditto. 1926′,38′thick, ditto.
(120) Ditto. ditto. 2440′ to 2465′, ditto.
10720 Dennis well No. 1, Rodger's farm, 311 bottles (I³, p. 226).
10720 Ditto. Box with duplicate specimens in bags.
10721 Heeley & Boggs, near Dennis well, 10 bottles (I⁴, p. 89).
10721 Ditto. ditto. box of duplicates in bags.
10722 Zeliff well No. 1, Zeliff farm, near Limestone, 26 bottles (not published).
10723 Moses well No. 6, Moses farm, near Limestone, 24 bottles (not published).
10724 Buchanan Bros. No. 1, Hooker farm, State line corners, well originally 1104′ deep; bottom of 3d SS. 1100′, production about 4 bbls., drilled deeper 1878. No improvement, spec. below 3d SS. 28 bottles.
10725 Emery, Patterson & Co., Lewis run, 11 bottles (I⁴, p. 97).
10726 Wilcox, No. 3 (John's well), I mile N. of McKean, Elk Co. line, 23 bottles (I⁴, p. 108).
10727 Wilcox & Co., No. 1, near the above; drilled in June, 1881, record not published, 15 bottles; depth as per labels.

Allegany County, N. Y.

10728 Triangle well No. 3, Alma Twp., 5 miles S. W. of Wellsville, 6 specimens of oil sand, 1207′ to 1236′.
10729 Triangle well No. 1, ditto, specimen at 627′.
10730 Richburgh well No. 1, Wirt Twp, specimen of oil sand.
10731 Knox well No. 1, ditto, ditto, ditto.
10732 Love well No. 1, Boliver ditto, ditto, ditto.

Specimens in Paper Bags.

10733 Clapp well No. 45, Warren Co., 356 bags in 3 boxes (I⁴, p. 282).
10734 Fagundus well No. 37, Warren Co., 366 bags (I⁴, p. 284).
10735 Ohlen well No. 1, Abbott Twp., Potter Co., 401 bags; well 2029′ deep.
10736 Ditto, No. 2, West Branch Twp., Potter Co., 341 bags; well 1750′ deep.
10737 Ditto, No. 3, Abbott Twp., Potter Co., 436 bags; well 2230′ deep.
10738 Ditto, No. 4, Abbott Twp., Potter Co., 418 bags; well 2100′ deep.

These specimens were taken every five feet as numbered on the bags. No records of the Potter county wells have been published.

Specimens of Crude Petroleum.

The dates on the labels and in the catalogue show when the samples were received and tests of gravity made. Some of the bottles have been exposed to the light for years, and not having been very tightly corked, the oil has changed considerably, both in color and gravity.

The numbers in brackets refer to the old numbers on bottles. The wells from which specimens Nos. 5, 6, 9, 36, 59, 60, 70 and 71 were obtained were very small and unremunerative. Nos. 43, 44, 47, 61 and 62 were abandoned as worthless after testing.

Crawford County.

10739 (1) Kerr well, Church run, typical "green oil," received Nov., 1878. Gravity 47½°.

10740 (2) Old well, E. Titusville; dipped from drive pipe July, 1878, gravity 46°.

10741 (3) Gravel pits, E. Titusville; dipped from drive pipe July, 1878, gravity 31½° (see I^3, p. 421).

Venango County.

10742 (4) Pipe Line oil, Octave district, oil delivered at Titusville by Octave Pipe Line, Nov., 1878, gravity 47°.

10743 (5) Watson well, Henderson farm, small production from 2d SS., Nov., 1878, gravity 48°+ (I^4, p. 53).

10744 (6) Johnson well, Pleasantville, small production from 2d SS., Nov., 1877, gravity 43½° (I^2, p. 188).

10745 (7) Benedict well, Hebert farm, typical "black oil" from so-called "4th SS.," May, 1881, gravity 48°.

10746 (8) Goal well, Wrigglesworth "black oil," Aug., 1876, gravity 47°.

10747 (9) ——— well, Cherry Tree run, "amber oil," horizon unknown, July, 1882, gravity 47°.

10748 (10) Galena well No. 1, Franklin lubricating oil from Venango, 1st SS., July, 1876, gravity 32½°.

10749 (11) Mason well No. 1, Raymilton, Sept., 1877, gravity 36½° (I^2, p. 201).

10750 (12) Raymond well No. 2, Raymilton, Sept., 1887, gravity 36° (I^4, p. 68).

10751 (13) Crawford well No. 7, Bullion, Oct., 1877, gravity 45½°.

10752 (14) Galena well No. 4, Bullion, Oct., 1877, gravity 46°.

10753 (15) Byrom well, Crawfords' Corners, Oct., 1877, gravity 42½°.

Warren County.

10754 (16) Joy well No. 3, Grand Valley, Dec., 1878, gravity 47° (I^4, p. 271).

10755 (17) Joy well No. 6, Grand Valley, Aug., 1882, gravity 44°.

10756 (18) Stewart & Wood, No. 1, South West Twp., Sept., 1878, gravity 46°.

10757 (19) Economite well, Dunn's run, Sept., 1877, gravity 42½° (I^4, p. 45).

10758 (20) Beatty well No. 1, Warren, March, 1875, gravity 39° (I', pp. 1 and 211).
10759 (21) Verback well No. 1, E. Warren, July, 1877, gravity 46°.
10760 (22) Magee well No. 3, E. Warren, July, 1877, gravity 45½°.
10761 (23) Crull well, N. Warren, July, 1877, gravity 46½° (I', p. 10).
10762 (24) Bishop's well, N. Warren, July, 1877, gravity 35°.
10763 (25) Osmer well No. 3, N. Warren, July, 1877, gravity 45 (I', p. 11).
10764 (26) Watson & Jones, No. 1, Glade run, Aug., 1877, gravity 43½° (I', p. 7).
10765 (27) Van Scoy No. 2, Kinzua, Nov., 1880, gravity 49°.
10766 (28) Johnson well, Stoneham, May, 1882, gravity 47°.
10767 (29) Hague well No. 1, Tiona, July, 1882, gravity 47°.
10768 (30) Mehoopany No. 8, lot 611, Cherry Grove, Oct., 1882, gravity 50°.
10769 (31) Steele & Buchanan, Garfield, Cherry Grove, Oct.. 1882, gravity 49°.
10770 (32) Clinton & Hopkins, lot 697, Cherry Grove, Oct., 1882, gravity 50°.
10771 (33) Magee & Horton, No. 1, lot 408, Sheffield, May, 1881, gravity 45°.

Forest County.

10772 (34) Nicholls' well, Lander's farm, Harmony Twp., June, 1878, gravity 45°.
10773 (35) McLaughlin well, Kepler farm, Harmony Twp., Oct., 1877, gravity 48°.
10774 (36) Berry well No. 1, Balltown, Howe Twp., May, 1877, gravity 41½° (I', p. 79).
10775 (37) Berry well No. 5, Balltown, Howe Twp., Aug., 1882, gravity 40°.
10776 (38) Grandin & Kelley, No. 3, Cook lands, Howe Twp., Aug., 1882, gravity 45° (I', p. 384).
10777 (39) Blue Jay No. 1, Foxburg (dipped from waste pool), Nov., 1880, gravity 36° (I', p. 80).
10778 (40) Clark & Foster, No. 1, lot 2735, near Warren Co. line, Oct., 1882, gravity 45°.

Clarion County.

10779 (41) Goss Bros., No. 1, Edenburg, Aug., 1876, gr. 49°.
10780 (42) Cramm & Co., No. 1, Wood farm, July, 1877, gravity 50°.
10781 (43) McLaughlin well, Clarion, June, 1874, garvity 44°.
10782 (44) Krautzer well, Callensburg, March, 1876, gr. 47°.

Armstrong County.

10783 (45) Westerman well, Brady's Bend Twp., Summerville farm, called "refined oil," as it burns without treatment, Nov., 1878, gravity 50½°.

Butler County.

10784 (46) Rumbaugh well No. 2, Washington Twp., Nov., 1878, gravity 45°.
10785 (47) Mahan well, Middlesex Twp., June, 1875, gravity 41° (I^3, p. 404).
10786 (48) Schnure well, Great Belt City, Oct., 1876, gr. 46°.

McKean County.

10787 (49) Dennis well, Bradford, Jan, 1878, gravity 46° (I^3, p. 226).
10788 (50) Blair well No. 1, Bradford, Nov., 1875, gravity 45°.
10789 (51) Prentice well No. 1, Bradford, April, 1876, gr. 44°.
10790 (52) Jackson & Walker, No. 2, Bradford, Nov., 1875, gravity 44°.
10791 (53) Fisher well No. 1, Mack lands, April, 1881, gravity 44°, 2d SS., oil.
10792 (54) Kennedy well, Bradford, July, 1876, gravity 41°, "slush oil."
10793 (55) Hartford well No. 2, Tarport, October, 1881, gr. 43°.
10794 (56) Bryon & Co. well, Foster farm, July, 1876, gr. 45°.
10795 (57) Everson well, Bennett farm, August, 1879, gr. 44°.
10796 (58) Olmstead well No. 1, Sanford farm, November, 1875, gravity 46° (I^4, p. 87).
10797 (59) Wilcox well No. 3, warrant 2426, May, 1881, gravity 38° (I^4, p. 108).
10798 (60) Wilcox Oil Co., No. 1, warrant 2426, June, 1881, gravity 42½°. Drilled in 1881.

Elk County.

10799 (61) Roy & Archer No. 3., warrant 3788, October, 1881, gravity, 40°. Drilled in 1881.

10800 (62) Johnson & Hallock No. 1, Millstone Twp., July, 1881, gravity 36°, ditto.

Alleghany County, N. Y.

10801 (63) Triangle well No. 3, Alma Twp., July, 1880, gr. 38°.

10802 (64) McBride well No. 1, Alma Twp., May, 1881, gr. 39°.

10803 (65) Richburg well No. 1, Wirt Twp., May, 1881, gr. 39°.

10804 (66) Knox Bros. well No. 1, Wirt Twp., August, 1881, gravity 40°.

10805 (67) Boyle well No. 1, Wirt Twp., July, 1881, gravity 35°+.

10806 (68) Waugh & Porter No. 1, Bolivar Twp., August, 1881, gravity 40°.

10807 (69) Painter Bros. No. 1, Genesee Twp., July, 1881, gravity 41½°.

Miscellaneous.

10808 (70) New Castle well, Mercer Co., November, 1877, gravity 32° (I^2, p. 275).

10809 (71) Cornell well, Crawford Co., September, 1878, gravity 29° (I^4, p. 120).

10810 (72) ——— well, Smith's Ferry, Beaver Co., January, 1877, gravity 49°.

10811 (73) Petrolia Oil, Lambton Co., Ontario, Canada, May, 1882, gravity 33°.

10812 (74) Oil Springs oil, ditto. May, 1882, gr. 40°.

10813 (75) Litchfield Coal Co. well No. 1, Litchfield, Montgomery Co., Ill., January, 1882, gravity 20°. From coal measures.

MINERAL COLLECTION.

By Dr. F. A. GENTH.

1875.

(To illustrate Report B, 1875).

NOTE: The first is the current number of the general collection of the Survey. The second is the field number of the specimen.

Museum number.	Field number.	
10814	(1)	Millerite, Gap mine, Lancaster Co.
10815	(2)	Chalcopyrite, Gap mine, Lancaster Co.
10816	(3)	Chalcopyrite, Gap mine, Lancaster Co.
10817	(4)	Nickeliferous pyrite, Gap mine, Lancaster Co.
10818	(5)	ditto. pyrrhotite, Gap mine, Lancaster Co.
10819	(6)	ditto. ditto. ditto. ditto.
10820	(7)	ditto. ditto. ditto. ditto.
10821	(8)	Glockerite? ditto. ditto. ditto.
10822	(9)	Hornblende, ditto. ditto. ditto.
10823	(10)	Nickel matte from Gap mine ore, Gap Furnaces, Lancaster Co.
10824	(11)	Nickel in bar, from Gap mine ore, manufactured by Joseph Wharton.
10825	(12)	Nickel in grain, ditto. ditto. ditto.
10826	(13)	Cobalt in bar, ditto. ditto. ditto.
10827	(14)	Cobalt oxide, ditto. ditto. ditto.
10828	(15)	Blue vitriol, ditto. ditto. ditto.
10829	(112)	Serpentine, Woods mine, Lancaster Co.
10830	(113)	Serpentine changing into magnesite.
10831	(114)	Genthite on chromite, Woods mine.

10832 (115) Titaniferous magnetite, Pleasant Grove, near Texas, Lancaster Co.
10833 (116) Titaniferous magnetite, Jenkins mine, Lan. Co.
10834 (117) Chromite and serpentine, Red Pit near Texas, Lancaster Co.
10835 (118) Serpentine approaching var. Williamsite. Red Pit.
10836 (119) ditto. Low's mine, near Texas, Lancaster Co.
10837 (120) ditto. ditto. ditto.
10838 (121) Chromite, Low's mine, near Texas, Lancaster Co.
10839 (122) Magnesite, ditto. ditto.
10840 (123) Pyrite, Lancaster, Lancaster Co.
10841 (124) Titaniferous magnetite, Soapstone Hill, near Tom Smedley's, Texas, Lancaster Co.
10842 (125) Roofing slate, Peach Bottom, Lancaster Co.
10843 (126) Ditto. ditto. ditto.
10844 (16) Copper in crystals, Cornwall, Lebanon Co
10845 (17) Copper upon quartz, ditto. ditto.
10846 (18) Copper ditto. ditto.
10847 (19) Cuprite, ditto. ditto.
10848 (20) Cuprite (chalcopyrite), ditto. ditto.
10849 (21) Cuprite, ditto. ditto.
10850 (22) Hydrocuprite, ditto. ditto.
10851 (23) Covellite, ditto. ditto.
10852 (24) Malachite, ditto. ditto.
10853 (25) Azurite and malachite, ditto. ditto.
10854 (26) Hematite with chlorite,etc.,ditto. ditto.
10855 (27) Magnetite pseudomorphous after hematite,
10856 (28) Magnetite in calcite, ditto. ditto.
10857 (29) Magnetite (loadstone), ditto. ditto.
10858 (30) Magnetite, ditto. ditto.
10859 (31) ditto. ditto. ditto.
10860 (32) ditto. ditto. ditto.
10861 (33) ditto. ditto. ditto.
10862 (34) ditto. ditto. ditto.
10863 (35) ditto. ditto. ditto.
10864 (36) Magnetite, ditto. ditto.
10865 (37) Quartz, ditto. ditto.
10866 (38) Quartz var. Hornstone, ditto. ditto.
10867 (39) Amphibole var. Tremolite, ditto. ditto.
10868 (40) Sandstone, ditto. ditto.

10869 (41) Trap, Cornwall, Lebanon Co.,
10870 (42) Trap, ditto. ditto.
10871 (71) Mica schist, Avondale upper quarry, Del. Co.
10872 (72) Ditto. ditto. ditto. ditto.
10873 (73) Hyalite, ditto. ditto.
10874 (74) Staurolite, Athensville, Delaware, Co.
10875 (75) Granite, orthoclase, albite, muscovite, biotite and quartz, Deshong's quarry Ridley Twp., Del. Co.
10876 (76) Granite, orthoclase, albite, muscovite, biotite, quartz and apatite, ditto. ditto.
10877 (77) Granite, Deshong's quarry, Ridley Twp., Del. Co.
10878 (78) Orthoclase, ditto. ditto.
10879 (79) Orthoclase, ditto. ditto.
10880 (80) Orthoclase and beryl, ditto.
10881 (81) Beryl in granite, ditto.
10882 (82) Gneiss with Autunite, ditto.
10883 (83) Serpentine, Morgan's Corner, Radnor township, Delaware Co.
10884 (84) Bronzite, Castle Rock, Newton Twp., Delaware Co.
10885 (85) Ditto. ditto. ditto.
10886 (86) Asbestus in quartz, Marble Twp., Del. Co.
10887 (87) Chromite, 26.7% $Cr_2 O_3$, Walter Green's mine, Delaware Co.
10888 (88) Chromite, Moro Phillips mine, Marble Twp., Delaware Co.
10889 (89) Chromite, Kaemmererite, etc.
10890 (90) Kaemmererite in Chromite.
10891 (91) Titaniferous magnetite.
10892 (92) Actinolite in talc, Marble Twp., Del. Co.
10893 (93) Serpentine var. Chrysotile, Blue Hill, Upper Providence Twp., Delaware Co.
10894 (94) Amphibole var. Grammatite in Oligoclase, near Dismal run, Middletown Twp., Delaware Co.
10895 (95) Fibrous limonite, John Smedley's, Middletown Twp., Delaware Co.
10896 (96) Pitchy limonite.
10897 (97) Corundum, Black Horse, Middletown Twp., Delaware Co.
10898 (98) Corundum in ?.

10899 (99) Corundum mostly altered into Fibrolite, near Media, Middletown Twp., Del. Co.
10900 (43) Conglomerate of Serpentine, carbonate of lime, etc., Fritz's Island, near Reading, Berks Co.
10901 (44) Chabazite, Fritz's Island, Berks Co
10902 (45) Chabazite with shells of undescribed zeolite. Fritz's Island, Berks Co.
10903 (46) Undescribed zeolite with Chabazite.
10904 (47) Undescribed zeolite with Apophyllite.
10905 (48) Apophyllite, Fritz's Island, Berks Co.
10906 (49) Thomsonite with Apophyllite, Berks Co.
10907 (50) Chalcopyrite with Magnetite, etc., Berks Co.
10908 (51) Talc, Soapstone quarry (Prince's), near Lafayette
10909 (52) station (P. & R. R. R.), east side of Schuylkill
10910 (53) river, Montgomery Co.
10911 (54) Chlorite slate, magnetite, etc., ditto.
10912 (55) Chlorite slate with garnets and chalcopyrite.
Ditto. ditto.
10913 (56) Amphibole (actinolite) in chlorite, ditto.
10914 (57) Vermiculite, Jefferisite ?, in chlorite slate.
10915 (58) Zoisite and Albite, ditto.
10916 (59) Serpentine, ditto.
10917 (60) Serpentine, pseudomorphous after Staurolite.
10918 (61) Dolomite, ditto.
10919 (62) Breunnerite in chlorite slate, Soapstone quarry, west side Schuylkill river, Montgomery Co.
10920 (63) Enstatite var. Bronzite, Rose's Serpentine quarry, west side Schuylkill river, Montgomery Co.
10921 (64) Serpentine, Schuylkill river, Montgomery Co.
10922 (65) Ditto. ditto. ditto.
10923 (66) Neolite, ? ditto. ditto.
10924 (67) Asbestus, ditto. ditto.
10925 (68) Prochlorite, ditto. ditto.
10926 (69) Limonite, Edge Hill, Montgomery Co.
10927 (70) Autunite on gneiss, West Philadelphia.
10928 (100) Chromite in serpentine, Moro Phillips mine, West Nottingham Twp., Chester Co.
10929 (101) Trap, basalt ? ditto. ditto.
10930 (102) Serpentine, Nottingham serpentine quarry, West
10931 (103) Nottingham Twp., Chester Co.

10932 (104) Limonite, Spencer's mine, West Nottingham Twp., Chester Co.
10933 (105) Magnesite, Goat Hill, Magnesia quarries, W. Nottingham Twp., Chester Co., Feb. 1, 1875.
10934 (106) Chromite, Black run, W. Nottingham Twp., Chester Co.
10935 (107) Tourmaline, A. Pugh's mill, East Nottingham Twp., Chester Co.
10936 (108) Hallite, East Nottingham Twp., ditto.
10937 (109) Drusy quartz, White Barrens, East Nottingham Twp., ditto.
10938 (110) Chromite in serpentine, White Barrens, Elk Twp., Chester Co.
10939 (111) Serpentine, White Barrens.
10940 (127) Corundum in albite near Unionville, Newlin Twp., Chester Co.
10941 (128) Corundum near Unionville.
10942 (129) Corundum and Damourite near Unionville, ditto.
10943 (130) Corundum with Damourite and Chlorite near Unionville, ditto. ditto.
10944 (131) Corundum and Damourite near Unionville, ditto.
10945 (132) Ditto. ditto.
10946 (133) Ditto. ditto.
10947 (134) Damourite, ditto.
10948 (135) Ditto. ditto.
10949 (136) Coeruleolactite, Gen. Trimble's mine, near White Horse station, E. Whiteland Twp., Chester Co.

EURYPTERID COLLECTION.

By I. F. MANSFIELD.

(*To illustrate Prof. James Hall's Report PPP on Euryp teridæ from the Lower Productive Coal Measures in Beaver county, 1884*).

NOTE: This special collection from the Darlington coal bed in Beaver county, Pa., was presented by Mr. Mansfield, to the Cabinet of the Geological Survey.

The one hundred and twenty-four specimens bear the current numbers of the Catalogue of the Survey Collections, thus:

10950	From slate under cannel coal.
10951 (29)	Ditto.
10952 (33½)	Ditto.
10953 (32)	Ditto.
10954 (33)	Ditto.

Only the first five have labels. The remainder (10955 to 11073) await examination to be properly labeled for the Catalogue, and cannot here be properly indicated.

FOSSIL PLANT COLLECTION,

By Leo Lesquereux.

Before 1887.

(To Illustrate Coal Flora of Pa., 1880, 1884.)

Note—After the general current number (painted on a specimen) Dr. Lesquereux's special number follows in parenthesis. The letters *a*, *b*, *c*, &c., refer to *pointers on the specimen.*

11074	(1)	Cordaites validus, Lx., ...	Cannelton.
		a. Cordaicarpus gutbieri, Gein.,	"
		b. Cordaites? sp. ined., ...	"
		c. (Reverse) pecopteris villosa, Bt., ...	"
11075	(2)	Fragment of bark with tubercles and counterpart. Mamillæ of stemmatoperis, ...	"
		a. Neuropteris pennifolia, Bt., .	"
11076	(3)	Lepidophloios dilatatus, Lx., . .	"
11077	(4)	Artisia, stem of Cordaites with a knot, ...	"
11078	(5)	Pecopteris villosa, Bt., ...	"
11079	(6)	Leaves of Cordaites and Tæniophyllum, ...	"
		a. Calamostachys ovalis, Lx., .	"
11080	(7)	Sphenophyllum schlotheimii, Bt.,	"
11081	(8)	Neuropteris cordifolia? Bt., . . .	"
		a. and b. Two fragments of basilar leaflets, ...	"
11082	(9)	Pecopteris villosa, Bt., ...	"
		a. Sphenophyllum schlotheimii, Bt., ...	"
11083	(10)	Calamites? organism unknown, .	"
		a. Neuropteris cordifolia, Bt., .	"
		b. Cordaites validus, Lx., . . .	"
		c. Carpolithes perpusillus, Lx.,	"
11084	(11)	Calamites ramosus, Bt., ...	"

EURYPTERID COLLECTION.

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(*To illustrate Prof. James Hall's Report PPP on Eurypteridæ from the Lower Productive Coal Measures in Beaver county, 1884*).

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10952 (33*b*)	Ditto.
10953 (32)	Ditto.
10954 (33)	Ditto.

Only the first five have labels. The remainder (10955 to 11073) await examination to be properly labeled for the Catalogue, and cannot here be properly indicated.

FOSSIL PLANT COLLECTION,

By Leo Lesquereux.

Before 1887.

(To Illustrate Coal Flora of Pa., 1880, 1884.)

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11075	(2)	Fragment of bark with tubercles and counterpart. Mamillæ of stemmatoperis, ...	"
		a. Neuropteris pennifolia, Bt., .	"
11076	(3)	Lepidophloios dilatatus, Lx., . .	"
11077	(4)	Artisia, stem of Cordaites with a knot, ...	"
11078	(5)	Pecopteris villosa, Bt., ...	"
11079	(6)	Leaves of Cordaites and Tæniophyllum, ...	"
		a. Calamostachys ovalis, Lx., .	"
11080	(7)	Sphenophyllum schlotheimii, Bt.,	"
11081	(8)	Neuropteris cordifolia? Bt., . . .	"
		a. and b. Two fragments of basilar leaflets, ...	"
11082	(9)	Pecopteris villosa, Bt., ...	"
		a. Sphenophyllum schlotheimii, Bt., ...	"
11083	(10)	Calamites? organism unknown, .	"
		a. Neuropteris cordifolia, Bt., .	"
		b. Cordaites validus, Lx., . . .	"
		c. Carpolithes perpusillus, Lx.,	"
11084	(11)	Calamites ramosus, Bt., ...	"

11085	(12)	Leaves of Cordaites with Cordaicarpus mansfieldi, Lx., partly broken, ...	Cannelton.
11086	(13)	Stemmatopteris peltigera? Bt., with mammillæ, no leaf scar, ...	"
		a. Top of Asterophyllites, . .	"
		b. Pecopteris villosa, Bt., . . .	"
11087	(14)	Rhacophyllum gutbierianum,	"
		a. Pecopteris villosa, Bt., . . .	"
		b. Neuropteris cordifolia, Bt, reverse, ...	"
11088	(15)	Lepidostrobus spectabilis, Lx., . .	"
11089	(16)	Trigonocarpus dawesii Ll. & H., .	"
		a. rachis of Fern, ...	"
		b. Cordaicarpus cinctus, Lx.. . .	"
11090	(17)	Neuropteris scheuchzeri, Bt., . .	"
		a. Asterophyllites equisetiformis, Bt., and reverse, . . .	"
		b. Odontopteris subcrenulata, Lx., ...	"
11091	(18)	Macrostachya lanceolata, La., (missing), ...	"
11092	(19)	Leaf of Cordaites mansfieldi, Lx.,	"
		a. Rhacophyllum gutbieranum, Gein., ...	"
11093	(20)	Pecopteris clintoni, Lx., ...	"
		a. (reverse), Neuropteris clarksoni, Lx., ...	"
11094	(21)	Cordaites validus, Lx., ...	"
		a. Lepidostrobus variabilis, L. & H., ...	"
		b. branch of Cordaianthus, . .	"
		c. Lepidodendron dichotomum, St., ...	"
		d. Cordaicarpus apiculatus, Lx.,	"
11095	(22)	Pecopteris miltoni, Bt., ...	"
11096	(23)	Macrostachya communis, Lx., . .	"
11097	(24)	Neuropteris cordata, Bt., with leaflet of Spenophyllum schlotheimii, Bt., supposed, . .	"
11098	(25)	Sigillaria monostigna, Lx., . . .	"
11099	(26)	Cross section and articulation of Asterophyllites, ...	"

11100 (27) Neuropteris acutifolia, Bt., . . . Cannelton.
a. (reverse), Pecopteris quadratofolia, Lx., ... "
11101 (28) Annularia longifolia, Bt., ... "
a. Neuropteris aspera, Lx., . . "
11102 (29) Pecopteris villosa, Bt., ... "
a. Eremopteris elegans, Ett., . "
11103 (30) Fragments of Lepidostrobus, . . "
11104 (31) Leaf of Cordaites mansfieldi, Lx., "
with a branch of Cordaianthus, ... "
11105 (32) Leaves of Cordaites mansfieldi, Lx., "
a. Alethopteris robusta, Lx., . . "
11106 (33) Stem of Cordaites, ... "
a. Sphenoyhyllum schlotheimii, "
Bt., ... "
b Neuropteris tenuifolia, Bt., . "
11107 (34) Lepidophloios dilatatus, Lx., . . "
a. (reverse), Spiropteris, . . . "
b. Carpolithes perpusillus, Lx., . "
11108 (35) Scaly rachis of Pecopteris, . . . "
a. Neuropteris cordata, Bt., and a whorl of Sphenophyllum, "
11109 (36) Pecopteris villosa, Bt., fruiting, . "
11110 (37) Pecopteris villosa, Bt., and stems, "
11111 (38) Pecopteris villosa, Bt., and pennæ, "
a. and *a.* Rachis (punctate), and branch of the same, . "
b. Leaves of Cordaites half decomposed, ... "
11112 (39) Leaf of Cordaites and fragment of pennæ of Pecopteris villosa, Bt., ... "
11113 (40) Top of pinna of a Pseudopecopteris? . . . . . "
a. Leaf of Taeniophyllum, . . "
b. Neuropteris cordata, Bt., . . "
11114 (41) Branch and leaves of Cordaites mansfieldi, Lx., ... "
11115 (42) Pseudopecopteris pluckneti, Bt., . "
11116 (43) Cordaites serpens, Lx., ... "
11117 (44) Dichotomous rachis of Fern, with Asterophyllites on the reverse, ... "

11118	(45)	Pecopteris villosa, Bt., ...	Cannelton.
		a. Sphonophyllum schlotheimii, Bt., ...	"
		b. Cardiocarpus, ...	"
11119	(46)	Leaves of Cordaites, ...	"
		a. Fine branch of Cordaianthus,	"
11120	(47)	Pecopteris pennæformis, Bt., . .	"
		a. Asterophyllites equissetiformis, Bt., ...	"
11121	(48)	Pecopteris villosa, Bt., ...	"
		a. Rhacophyllum filiciforme, Gut., ...	"
11122	(49)	Neuropteris (Clycopteris) fimbriata, La., ...	"
11123	(50)	Annularia sphenophylloides, Bt.,	"
11124	(51)	Cordaistrobus grand euryi, Lx., .	"
		b. (reverse), punctulate rachis of Ferns and basilar leaflet of Neuropteris cordata, Bt.,	"
11125	(52)	Rachophyllum filiciforme, Gut.,	"
11126	(53)	Cordaites mansfieldi, Lx., Tuft of leaves and top of a stem, .	"
11127	(54)	Cordaites costatus, Lx., ...	"
11128	(55)	Fragment of Calamites suckowii, Bt., ...	"
		a. Rhabdocarpus mammillatus, Lx., ...	"
11129	(56)	Leaf of Lepidodendron with scars of point of attachment, . .	"
11130	(57)	Pecopteris (Goniopteris) arguta, Bt. with a leaf of Taeniopteris, ...	"
11131	(58)	Stem and leaves of Cordaites borassifolius, Nug., ...	"
11132	(59)	Sigillaria monostigma, Lx. in *a.* .	"
		b. A leaflet of Sphenophyllum,	"
11133	(60)	Leaf scar of Rachiopteris, ...	"
11134	(61)	Cardiocarpus crassus, Lx., . . .	"
11135	(62)	Lepidostrobus prælongus, Lx. with leaves of Cordaites, . . .	"
11136	(63)	Cordaites costatus, Lx., ...	"
11137	(64)	Pecopteris quadratifolia, Lx., . .	"
11138	(65)	Neuropteris cordata, Bt., ...	"
		a. Alethopteris robusta, Lx., . .	"

		b. Pecopteris dentata, Bt. with fragments of leaves of Cordaites and Calamites on reverse, ...	Cannelton.
11139	(66)	Odontopteris cornuta, Lx. in a, .	"
11140	(67)	Lepidostrobus truncatus, Lx., . .	"
		a. Pecopteris miltoni, Bt., . . .	"
11141	(68)	Cordaites serpens, Lx. in *a*, with Pecopteris villosa, Bt., on reverse, ...	"
11142	(69)	Sphenopteris subalata, Gein. in *a*, with Pecopteris villosa, Bt.,	"
		b. (reverse) basilar leaflet of Neuropteris angustifolia, Bt. M., ...	"
11143	(70)	Flowers of Cordaites (Cordaianthus) in *a*, ...	"
		b. Cardiocarpus ellipticus, St., .	"
		c. Cardiocarpus ellipticus, St., under a leaf of Cordaites, .	"
11144	(71)	Pecopteris miltoni, Bt., fine pinna,	"
11145	(72)	Fragment of Sphenopteris, undet.,	"
		a. (reverse), Pecopteris villosa, Bt., ...	"
		b. Cardiocarpus ellipticus, St., .	"
		c. Alethopteris lonchitica, Bt., .	"
11146	(73)	Neuropteris angustifolia, Bt., a leaflet covering a pinna of Pecopteris, ...	"
		a. Pecopteris acuta, Bt., . . .	"
11147	(74)	In a. Rachis with scales, ...	"
		b. Neuropteris tenuifolia, Bt., .	"
11148	(75)	Callipteridium rugosum, Lx., (wanting,)	"
11149	(76)	Fragment of leaves of Cordaites, .	"
		a. Lepidophyllum truncatum and macrospores, ...	"
		b. Sphenophyllum Schlotheimii, one whorl, ...	"
11150	(77)	Pseudopecopteris nummularia, Gutt., ...	"
11151	(78)	Odontopteris cornuta, Lx., a peculiar form, ...	"
11152	(79)	Rhacophyllum adnescens, Ll. and H., very large, new species,	"

11153	(80)	Neuropteris cordata, Bt., in *a*, . .	Cannelton.
		b. Fragment of crushed Calamites, ...	"
11154	(81)	Neuropteris vermicularis, Lx., . .	"
11155	(82)	Sphenophyllum schlotheimii, Bt.,	"
11156	(83)	Fragment of Rhacophyllum, in *a*,	"
		b. Lepidostrobus variabilis, Ll. and H., ...	"
11157	(84)	Neuropteris vermicularis, Lx., . .	"
11158	(85)	Pecopteris villosa, Bt., ...	"
		a. Rhacopyllum filiciforme, Gutt., ...	"
11159	(86)	Lepidocystis vescicularis, Lx., in *a*.,	"
11160	(87)	Rhacophyllum, species?	"
11161	(88)	Pecopteris, species fruiting, . . .	"
11162	(89)	Leaf of Cordaites borassifolius, St.,	"
		a. Neuropteris angustifolia, Bt.,	"
		b. Fragment of Sphenopteris, .	"
11163	(90)	Pseudopecopteris newberryi, Lx.,	"
11164	(91)	Pseudopecopteris newberryi, Lx., and Pecopteris villosa, Bt., . .	"
11165	(92)	Callipteridium inequale, Lx., in *a*.,	"
		b. (reverse) woody fibres of Calamites, ...	"
11166	(93)	Macrostachya infundibuliformis, Schp., ...	"
		a. Alethopteris robusta, Lx., .	"
11167	(94)	Pecopteris Clintoni? Lx., in *a*., .	"
11168	(95)	Pecopteris villosa, Bt., ...	"
11169	(96)	*a*. (and reverse) Callipteridium inaequale, Lx., ...	"
		b. Cordaianthus baccifer in *a*., .	"
11170	(97)	Cordianthus baccifer, in *a*, . . .	"
11171	(98)	Spiropteris, fine, ...	"
11172	(99)	Cordaianthus unfolding, ...	"
11173	(100)	Cordaites validus, Lx., ...	"
		b. Rachophyllum filiciforme, Gutt., ...	"
11174	(101)	Sphenophyllium schlotheimii, Bt., in *a*, ...	"
		b. Cardiocarpus ellipticus, St., in *a*, and leaf of Tæniophyllium, ...	"

11175 (102) *a* Neuropteris fasciculata, Lx., . . Cannelton.
b. Pecopteris quadratifolia, Lx., "
11176 (103) Branch of Cordaites (Artisia), fine, with Pecopteris villosa, Bt., "
11177 (104) Cordaites costatus, Lx., ... "
11178 (105) Pseudopecopteris anceps, Lx., . . "
a. (reverse) Neuropteris scheuchzeri, Bt., ... "
11179 (106) Neuropteris fasciculata, Lx., . . "
11180 (107) (reverse) Cordaites borassifolius St., ... "
11181 (108) *a*. Neuropteris cordata, Bt., . . . "
b. Artisia, stem of Cordaites, . "
11182 (109) Neuropteris clarksoni, Lx., . . . "
11183 (110) *a*. Pecopteris obsoleta, Lx., . . . "
b. Rachis of fern, ... "
c. Cardiocarpus ellipticus, St., . "
c. Cordaites with woody fibres, "
11184*(111) *a*. Lycopodites alopecuroides, Lx., ined., ... "
b. Neuropteris angustifolia, Bt., "
11185 (112) *a*. Pecopteris quadratifolia, Bt, "
b. Cordaites borassifolius, St., . "
c. Lepidodendron (species), . . "
11186 (113) *a*. Sphenophyllum schlotheimii,
b. Cardiocarpus conglobatus, Lx. "
11187 (114) Stem of Cordaites costatus, Lx.. . "
11188 (115) *a*. Neuropteris (Cyclopteris) clarksoni, Lx., ... "
11189 (116) *a*. Lepidodendron dichotomum, St., small stem, ... "
11190 (117) Cardiocarpus ellipticus, St., . . . "
a. Lepidocystis vescicularis, Lx., (reverse), ... "
b. Leaf of Cordaites, ... "
11191 (118) *a*. Carpolithes perpusillus, Lx., "
b. Lepidophyllum truncatum, "
emptied of spores, ... "
11192 (119) Cordaicarpus costatus, Lx., . . . "
11193 (120) *a*. Pseudopecopteris nervosa, Bt., with large rachis of ferns, "
11194 (121) Striate rachis of ferns, ... "
11195 (122) *a*. Lepidophyllum foliaceum, Lx., "
b. Lepidocystis vescicularis, Lx., "

11196 (123) Eremopteris artemisiaefolia, Bt., Cannelton.
11197 (124) Neuropteris angustifolia, Bt., . . "
a. (reverse) basilar leaflet of the same, ... "
11198 (125) Pecopteris quadratifolia, Lx., . . "
a. Pecopteris villosa, Bt., . . . "
11199 (126) *a.* Pseudopecopteris anceps, Lx., "
11200 (127) Cordaicarpus costatus, Lx., counterpart of 119, ... "
11201 (128) Cordaites mansfieldi, Lx., ... "
11202 (129) Pseudopecopteris scabra, Lx., in *a.* "
b. (reverse.) Cordaicarpus cinctus, Lx., ... "
11203 (130) Asterophyllites equisetiformis, var. erectifolia, Andrews, . "
a. (reverse) Cordaites borassifolius St., ... "
b. (reverse) Neuropteris tenuifolia, Bt., ... "
11204 (131) Pseudopecopteris anceps, Lx., . "
11205 (132) Stem of Cordaites eostatus, Lx., in maceration, ... "
b. (reverse) Pecopteris villosa, Bt., ... "
11206 (133) Lepidodendron, species? . . . . "
11207 (134) Pseudopecopteris hispida, Lx., . "
b. Cordaites with woody fibres, "
11208 (135) Cordaites serpens, Lx., ... "
11209 (136) Cordaites mansfieldi, Lx. Stem and leaves very fine and large, ... "
11210 (137) Cordaites species, a leaf, ... "
11211* (138) Pecopteris quadratifolia, Lx., . . "
11212 (139) Spiropteris of Pecopteris, . . . "
11213 (140) Cordaites stem? . . . . . "
a. Lepidophyllum cultriforme, Lx., ... "
11214 (141) *a.* Primularia capillacea, Ll. & H., "
11215 (142) Cordaites borassifolius, St. with Pecopteris villosa. Bt., . . "
11216 (143) Cordaianthus, a branch, ... "
11217 (144) *a.* Neuropteris desorii, Lx., . . "

* Probably misnumbered 145.

11218 (145) *a.* Pecopteris obsoleta, Lx., . . Cannelton.
b. Fibrous leaf of Cordaites, . "
11219 (146) Phragma of Calamites, ... "
11220 (147) *a.* Pseudopecopteris pluckneti, Bt., ... "
b. Pecopteris villosa, Bt., . . . "
11221 (148) (reverse) Cordaites borassifolius, Bt., ... "
11222 (149) Calamites ramosus, Bt., Phragma, or cross section of a joint, . "
11223 (150) Pecopteris erosa, Gutt., ... "
11224 (151) *a.* Pecopteris villosa, Bt., . . . "
b. Cordaianthus, species, . . . "
c. Leaves of Cordaites mansfieldi, Lx., ... "
11225 (152) Cordaicarpus cinctus, Lx., . . . "
11226 (153) Oligocarpia gutbieri, Goepp., . . "
11227 (154) Cordaites costatus, Lx., ... "
11228 (155) Lepidophyllum cultriforme, Lx., "
11229 (156) *a.* Lepidostrobus variabilis, Ll. & H., ... "
11230 (157) *a.* Rhacophyllum thalliforme, Lx., ... "
b. Leaves of Lepidodendron, . "
11231 (158) Pseudopecopteris scabra, Lx., . "
11232 (159) Pecopteris villosa, Bt., ... "
11233 (160) Asterophyllites equisetiformis, Bt., var. erectifolius, . . . "
b. Dictyopteris oblique, Bt., . . "
11234 (161) Oligocarpia gutbieri ? Goepp. nervation obsolete, ... "
a. (reverse) Neuropteris angustifolia, with rachis of fern, "
11235 (162) Pecopteris arguta, Bt., ... "
11236 (163) Fragment of Lepidostrobus, . . "
11237 (164) Branch of Calamites ramosus, Bt., "
11238 (165) Rhabdocarpus clavatus ? St., with leaves of Cordaites, . . . "
a. Branches of Sphenophylium, "
11239 (166) Stem of Sphenophylum, . . . "
11240 (167) Neuropteris scheuchzeri, Bt., . "
11241 (168) Asterophyllites equisetiformis, upon a Sigillaria, ... "

11242 (169) Pecopterius villosa, Bt., ... Cannelton.
a. Fragment of Calamostachya, "
11243 (170) Undulate rugose stem of Cordaites ? . . . . . "
11244 (171) Annularia longifolia, var. intermediata, Bt., ... "
a. Neuropteris aspera, Lx., . . "
11245* (172) Macrostachya lanceolata, Lx., . "
11246 (173) Cordaianthus baccifer, Grd. 'E., "

Specimens from Alabama sent by Mr. Thomas Sharp.

11247 (174) Stigmaria ficoides, var. inæqualus, Geopp., ... Black Vein, Ala.
11248 (175) Same, ... "
11249 (176) Same, with coaly bark, ... "
11250 (177) Same with leaves, ... "
11251 (178) Same, ... "
11252 (179) Same, with central axis opened, "
11253 (180) Same with central axis discovered, "
11254 (181) Stigmaria ficoides, var elliptica, Goepp. with central axis discovered, ... "
11255 (182) Same, ... "
11256 (183) Same, ... "
11257 (184) Pinnularia capillacea, Ll. & H. with dichotomous stems, or reverse, ... "
11258 (185) Neuropteris smithsii, Lx. with dichotomous stems or reverse, ... "
11259 (186) Bornia radiata Bt. & reverse in a. "
11260 (187) Same, ... "
11261 (188) Same, ... "
11262 (189) Lepidodendron veltheimianum St., "
11263 (190) Lepidodendron restitum, Lx., . . "
11264† (191) Trunk of Knorria imbricata, St., . "
11265 (192) Same, ... "
11266 (193(Flattened trunk of Knorria imbricata, St., ... "
11267 (194) Knorria, ... "

* Wanting.

† This is a specimen marked 191, which evidently belong with 310, 311, etc.

a. small branch of Lepidodendron, ... Black Vein, Ala.
b. leaves of Lepidodendron, . . "
11268 (195) Cyclostigna, species obscure, . . "
a. small branch of Lepidodendron, ... "
11269 (196) Cyclostigma, species, ... "
11270 (197) Sigillaria or Ulodendron, decoricated, ... "
a. (reverse.) Cardiocarpus ovalis, Lx., nucleus, ... "
11271 (198) Knorria imbricata? St., ... "
11272 (199) Sigillaria, decoricated, ... "
11273 (200) Trailing branches of Ulodendron upon coal. . . . . "
11274 (201) Ulodendron ellipticum, St., . . . "
11275 (202) Same, ... "
11276 (203) Same, ... "
a. Leaves of Lepidodendron, . "
11277 (204) Large dichotomons rachis of Fern, (Neuropteris?) . . . . . "

Specimens of Prof. I. C. White from Greene county, Pa., two-and-one-half miles from Jollytown, Pa., 550 feet above the Waynesburg coal.

11278 (205) (Pa. 1) Neuropteris hirsuta, Lx. with Annularia calamitoides, Sch., ... Greene Co. Pa.
11279 (206) (Pa. 2) Neuropteris flexuosa, Bt. in *a.* N. hirsuta in *b.*, . . . "
11280 (207 (Pa. 3) *a* Cyclopteris of Neuropteris flexuosa, Bt., ... "
11281 (208) (3b) Same, ... "
11282 (209) (3c) Same, ... "
11283 (210) (4a) Neuropteris flexuosa, Bt., . "
11284 (211) (4b) Same, ... "
11285 (212) (4c) Same, ... "
11286 (213) (4d) Same, ... "
11287 (214) (5b) Same, ... "
11288 (215) (5a) Neuropteris plicata, Lx., . . "
11289 (216) (5c) Same, ... "
11290 (217) (6) Neuropteris flexuosa with terminal leaflet, ... "

11291 (218) (6b) Same, ... Greene Co., Pa.
11292 (219) (6c) Same, ... "
11293 (220) (6d) Same, ... "
11294 (221) (7) Odontopteris obtusa, Bt., . . "
11295 (222) (8) Same, ... "
11296 (223) (8a) Same, ... "
11297 (224) (8b) Same, ... "
11298 (225) (8d) Same, ... "
11299 (226) (8c) Same, ... "
11300 (227) (8g) Same, ... "
11301 (228) (8h) Same, ... "
11302 (229) (8l) Same, and reverse Neuropteris hirsuta, Lx., ... "
11303 (230) (8n) Same and Neuropteris hirsuta, Lx., mixed, ... "
11304 (231) (9) Same and Pecopteris flexuosa, Bt., mixed, ... "

Specimens sent by J. Sutton Wall, Monongahela City.

11305 (232) Pecopteris platyrachys, Bt., . . . "
11306 (233) Calamites approximatus, Bt., . . "
11307 (234) Neuropteris angustifolia, Bt., . . "
11308 (235) Sigillaria species very remarkable with prominent areoles, . "
11309 (236) Neuropteris hirsuta, Lx., ... "
11310 (237) Lepidodendron rumosum, St., . . "
11311 (238) Trochophyllum clavatum, Lx., . "
11312 (239) Sigillaria brardei, Bt., a very large "
form, ... "
11313 (240) Sigillaria brardei, Bt., decoricated, "
11314 (241) Rachis of fern, ... "
11315 (242) Sphenoglossum, Emmons, genus of uncertain relation, ... "
11316 (243) Same, ... "

Specimens Collected by Mr. Sherwood, July, 1873, Head of Hill Creek, Charlestown Township, Upper Devonian.

11317 (244) Nos. 1 to 15. Dictyophytum ramosum, Lx., in 15 specimens, or rather fragments, (only 12 found), ... Tioga Co.

Miscellaneous sources.

11318 (245) Pterophyllum species, nervation obsolete. New Red Sandstone, S. E. corner of Hilltown township, Bucks county, Pa., I. S. Ash, of Greenville, ... Bucks Co.
11319 (246) (6e) Neuropteris flexuosa, Bt., with terminal leaflet, I. C. White, ... Greene Co.
11320 (247) (8a) Same, nerves inflated by pyrites I. C. White, . . . "
11321 (248) Stigmaria ficoides, Bt., Seneca Vein, ... Pittston, Pa.
11322 (249) Cordaites borassifolius, St., a whole leaf, ... Cannelton, Pa.
a. rachis of Pecopteris villosa, and pinna of the same, . . "
11323 (250) Pseudopecopteris pluckneti, Bt., "
11324 (251) Pseudopecopteris nummularia, Gutt., ... "
11325 (252) Sigillaria monostigna, Lx., . . . "
11326 (253) Neuropteris clarksoni, Bt., . . . "
11327 (254) *a.* Rhacophyllum filiciforme, Gutt., ... "
b. round basilar leaflets of Neuropteris angustifolia, . . . "
c. Dichotomous rachis of fern, . "
d. Pecopteris villosa, Bt., . . . "
11328 (255) Lepidophyllum mansfieldi, Lx., . "
11329 (256) Cordaicarpus mansfieldi, Lx., . . "
11330 (257) Pecopteris squamosa, Lx., . . . "
11331 (258) Callipteridium mansfieldi, Lx., . "
11332 (259) Annularia longifolia, Bt., ... "
11333 (260) Lepidodendron aculeatum, St., . "
11334 (261) Pecopteris acuta, Bt., ... "
11335 (262) *a.* Rachiopteris villosa, Lx., . . "
b. Neuropteris tenuifolia, Bt., . "
11336 (263) Stemmatopteris angustata, Lx., . "
11337 (264) Neuropteris angustifolia, Bt., . . "
11338 (265) *a.* Rhabdocarpus jacksonianus, Lx., ... "
11339 (266) Cordaicarpus costatus, Lx., . . . "

11340	(267)	Cordaianthus ovatus, Lx., . . .	Cannelton, Pa.
11341	(268)	Cyclopteris of Neuropteris hirsuta, Lx., ...	"
11342	(269)	Neuropteris capitata, Lx., . . .	"
11343	(270)	Sigillaria monostigma, Lx., . .	"
11344	(271)	Neuropteris fimbriata, Lx., . .	"
		a. Odontopteris squamosa, Lx.,	"
11345	(272)	Cordaites crassus, Lx., ...	"
		a. Neuropteris clarksoni, Lx., .	"
11346	(273)	Calamites ramosus, Bt., ...	"
11347	(274)	Calamites cannaformis, Bt., . .	"
11348	(275)	Pecopteris oreopteroides, Bt., .	"
11349	(276)	Lepidostrobus goldenbergii, Bt.,	"
		a. Pecopteris squamosa, Lx., .	"
11350	(277)	Cordaites costatus, Lx., ...	"
11351	(278)	Sphenopteris chaerophylloides,	"
11352	(279)	Cordaites costatus, Lx. branch and scars of leaves, . . .	"
		a. (reverse) Calamites ramosus, Bt., ...	"
11353	(280)	Cordaites mansfieldi, branch and leaves, ...	"
		a. Calamites ramosus, Bt., . .	"
		b. Pecopteris villosa, Bt., . . .	"
11354	(281)	Neuropteris clarksoni, Lx., basilar leaflet, ...	"
11355	(282)	Pseudopecopteris pluckneti, Bt.,	"
		a. Leaf of Taeniophyllum, . .	"
11356	(283)	Annularia sphenophylloides, Bt.,	"
11357	(284)	*a.* Pseudopecopteris anceps, Lx.,	"
		b. Alethopteris lonchitica, Bt.,	"
		c. Sphenophyllum schlotheimii,	"
11358	(285)	Cordaites serpens, Lx., ...	"
11359	(286)	Neuropteris clarksoni, Lx., . .	"
		a. Cordaites, branch and leaf, .	"
11360	(287)	Neuropteris scheuchzeri, Bt., . .	"
11361	(288)	Pecopteris villosa, Bt., variety and reverse, ...	"
11362	(289)	Cordaites serpens, Lx., ...	"
11363	(290)	Alethopteris serlii, Bt., ...	"
11364	(291)	Alethopteris, serlii, Bt., ...	"
11365	(292)	Cyclopteris form of Neuropteris cordata, Bt., ...	"

a. Carpolithes perpusillus, Lx., Cannelton, Pa.
b. Pecopteris villosa, Bt., . . . "

11366 (293) Alethopteris robusta. Lx., . . . "
11367 (294) Pecopteris villosa, Bt., ... "
a. (reverse) Cordiates borassifolius, St., ... "
11368 (295) Neuropteris loschii, Bt., ... "
11369 (296) Same, ... "
11370 (297) Asterophyllites equisetiformis, "
11371 (298) Neuropteris vermicularis, Lx., . "
11372 (299) Fruiting spike of Annularia longifolia, Bt., ... "
11373 (300) Pecopteris villosa, Bt., ... "
11374 (301) Ultimate pinnules of Neuropteris loschii, Bt., ... "
a. (reverse) Pseudopecopteris anceps, Lx., ... "
11375 (302) Callipteridium inæquale, Lx., . . "
11376 (303) Alethopteris robusta, Lx., ... "
11377 (304) Sigillaria brardii, Bt., ... "
a. Neuropteris obscura, Lx., . . "
11378 (305) Alethopteris robusta, Lx., ... "
a. Neuropteris hirsuta, Lx., . . "
11379 (306) Pseudopecopteris anceps, Lx., . . "
a. Pecopteris squamosa, Lx., . "
11380 (307) Pseudopecopteris anceps, Lx., . . "
11381 (308) Lepidophyllum mansfieldi, Lx., . "
11382 (309) Cordaites lingulatus, Grd. E., . . Pittston, Pa.
11383 (310) Lepidophyllum oblongifolium, Lx., double nodule, ... Mason Cr. Ill..
11384 (311) Neuropteris inflata, Lx. double nodule, ... "
11385 (312) Neuropteris decipiens, Lx., . . . "
11386 (313) Same, ... "
11387 (314) Same with basilar pinnules, . . . "
11388 (315) Neuropteris decipiens, Lx. small leaflet with basilar pinnules, "
11389 (316) Same, ... "
11390 (317) Same, ... "
11391 (318) Lepidostrobus oblongifolius, Lx. and transverse section, with basilar pinnules, ... "

11392 (319) Pecopteris unita, Bt. simple nodule, Mason Cr., Ill.
11393 (320) Same, ... "
11394 (321) Pecopteris dentata, Bt. double nodule, ... "
11395 (322) Annularia longifolia, Bt. simple nodule, ... "
11396 (323) Cordaites grandifolius, Lx. under Campbell's ledge, XI, . . Pittston, Pa.
11397 (324) Cordaites grandifolius, base of leaf. Campbell's ledge, ... "
11398 (325) Cordaites grandifolius, top of leaf. Campbell's ledge, ... "
11399 (326) Rachis of fern, ... Tremont, Pa.
a. Annularia sphenophylloides, "
b. Pecopteris unita, Bt., ... "
11400 (327) Dictyopteris obliqua, Bunb., both sides, ... Pittston, Pa.
11401 (328) Neuropteris tenuifolia with leaves of Lepidodendron, ... Rausch Gap, Pa.
11402 (329) Alethopteris serlii, Bt., ... "
11403 (330) Sphenopteris mixta, Schp., . . . Clinton, Mo.
11404 (331) Neuropteris grangeri, Bt., . . . Rausch Gap.
11405 (332) Branch of Asterophyllites equisetiformis, Bt., ... Cannelton.
11406 (333) Cyclopteris, species, ... Rausch Gap?
11407 (334) Striated leaves of Stigmaria, . . "
11408 (335) Stigmaria ficoides, Bt., and leaves, "
11409 (336) Pecopteris fontainei, Lx., and reverse, ... Mazon Creek, Ill.
11410 (337) *a*. Sphenopteris hœninghausi, Bt. and reverse, ... Dade, Ga.
b. Alethopteris helenæ, Lx., . "
11411 (338) Sphenopteris hœninghausi, Bt., . Alabama.
11412 (339) Pseudopecopteris muricata, Bt., . "
11413 (340) Alethopteris helenæ, Lx., . . . "
11414 (341) Neuropteris smithsii, with rootlets of fern, ... "
11415 (342) Pecopteris clintoni, Lx., ... Clinton, Mo.
11416 (343) Pseudopecopteris nervosa, Bt., . . Rhode Island.
11417 (344) Annularia longifolia, var., angustifolia, ... Kansas.
a. Alethopteris ambigua, Lx., . "
b. Pecopteris erosa, Gutt., . . . " .

11418 (345) Pecopteris villosa, Bt., double nodule, ... Mazon Creek.
11419 (346) Archæopteris macilenta, Lx., . . Meshoppen.
11420 (347) Callipteridium membranaceum, Lx., ... Clinton, Mo.
11421 (348) Same, ... "
11422 (349) Neuropteris smithsii, Lx,. . . . . Alabama.
11423 (350) Lepidodendron clypeatum, Lx., . Pittston.
11424 (351) Sigillaria pachyderma, Bt., . . . "
11425 (352) Lepidodendron sternbergii, Bt., . Alabama.
11426 (353) Sigillaria cyclostigma, Bt., with deformation of scars and reverse, ... Olyphant.
a. Rhacophyllum clarkii, Lx., . "
11427 (354) Stigmaria ficoides, Bt., Stem and leaves, ... Pittston.
11428 (355) Stigmaria ficoides, var. minor, a long stem, ... "
11429 (356) Sphenopteris communis, Lx., . . Arkansas.
11430 (357) Pecopteris erosa, Gutt., ... Kansas.
11431 (358) Alethopteris serlii, Bt., ... Carbon Hill.
a. (reverse) Neuropteris obscura, Lx., ... "
11532 (359) Calamites cannæformis, Bt., . . . Pittston.
11433 (360) Lepidodendron modulatum, Lx., . "
11434 (361) Oliocarpia quercifolia? Goepp., obscure, ... Tennessee.
a. Rhacophyllum spec. ined., . "
11435 (362) Pecopteris villosa, Bt. (double nodule), ... Mazon Creek, Ill.
11436 (363) Macrostachya communis, Lx., . . Archibald.
11437 (364) Pseudopecopteris nervosa, Bt., half Nodule, ... Mazon Creek.
11438 (365) Pecopteris restita, Lx., ... Clinton, Mo.
a. (reverse) Pecopteris dentata, Bt., ... "
11439 (366) Neuropteris smithsii, Lx., ... Alabama.
11440 (367) Rhabdocarpus jacksonianum? Lx., Butler vein nucleus, . . . Pittston.
11441 (368) Sphenopteris brittsii, Lx., ... Clinton, Mo.
11442 (369) Lepidodocystis vesicularis, Lx., Campbell's ledge, ... Pittston, Pa.

11443 (370) Lepidodocystis vescicularis, Lx., var., Campbell's ledge, . . Pittston, Pa.
11444 (371) Same, ... "
11445 (372) Rhacophyllum gutbierianum, Geim, half nodule, . . . Mazon Creek, Ill.
11446 (373) Pseudopecopteris subcrenulata, Lx., half nodule, ... "
11447 (374) Alethopteris pennsylvanica, Lx., . Kansas.
11448 (375) Pseudo-pecopteris dimorpha, Lx. M., from S. Wall.
11449 (376) Archæopteris macilenta, Prof, I. C. White, ... Meshoppen, Pa.
11450 (377) Same, a fragment, ... "
11451 (378) Same, ... "
11452 (379) Same, ... "
11453,11453A (380) Lepidocystis, species undeterminable, . . . "
11454 (381) *a.* Two fragments of stems or rachises of Archæopteris not determinable, ... "
11455 (382) Rhabdocarpus amygdalæformis, G. and Berger, ... Kansas.
11456 (383) Cardiocarpus crassus, Lx., nucleus, Campbell's ledge, ... Pittston.
11457 (384) Cardiocarpus crassus, nucleus and pericarp, ... "
11458 (385) Same, impression of nucleus, . . "
11459 (386) Same, nucleus, ... "
11460 (387) Same, nucleus and pericarp, . . "
11461 (388) Carpolithes granularis, Lx., . . . "
11462 (389) Cardiocarpus simplex, Lx., . . . "
11463 (390) Cardiocarpus pachytesta, Lx., . . "
a. Sporocystis planus, Lx., . . "
b. Lepidocystis fraxiniformis, "
11464 (391) Cardiocarpus annulatus, Ny., . . "
a. Rhabdocarpus costatus, Lx., . "
11465 (392) Cardiocarpus annulatus, Ny., . . Arkansas.
11466 (393) Cardiocarpus bicuspidatus, St., . "
11467 (394) Carpolithes multistriatus, Lx., . . "
11468 (395) Whittleseya microphylla, Lx., . . "
11469 (396) Same, ... "
11470 (397) Cardiocarpus longicollis, Lx., . . Tennessee.

11471 (398) Rhabdocarpus jacksonianus, Lx., Tennessee.
11472 (399) Asterophyllites gracilis, Lx., fruiting, ... Dade, Ga.
11473 (400) Archæopteris striata, Andrews, . Clinton, Mo.
11474 (401) Same, ... "
11475 (402) Trigonocarpus schlutzianus, G. & B., ... Illinois.
11476 (403) Trigonocarpus starkianus, Lx., . . "
11477 (404) Same, ... "
11478 (405) Same, ... "
11479 (406) Same, ... "
11480 (407) Trigonocarpus adamsii, Lx., . . . "
11481 (408) Same, ... "
11482 (409) Same, ... "
11483 (410) Trigonocarpus schultzianus, G & B., ... "
11484 (411) Rhabdocarpus mamillatus, Lx., . "
11485 (412) Rhabdocarpus ovalis, Lx., ... "
11486 (413) Trigonocarpus noeggrathi, Bt., . "
11487 (414) Trigonocarpus ademsi, Lx., 2 specimens, ... "
11488 (415) Pecopteris defrancii, Bt., ... Pittston.
11489 (416) Lepidodendron modulatum, Lx., Lackawanna.
11490 (417) Cordaites grandifolius, Lx., Campbell's ledge, ... Pittston.
11491 (418) Same, leaves splitting, ... "
11492 (419) *a.* Lepidocystis vesicularis, Lx., . "
b. Lepidocystis fraxiniformis, Lx., "
c. Sporocystis planus, Lx., ... "
11493 (420) (reverse) Cordaites grandifolius, "
a. Sporocystis planus, Lx., . . "
11494 (421) Sigillaria tessellata, Bt., decoricated, ... "
11495 (422) Knorria, species, bastard limestone, ... Illinois.
(reverse) Neuropteris loschii, Bt., "
11496 (423) Cordaites grandifolius, Bt., Campbell's ledge, ... Pittston.
11497 (424) Lepidocystis vescicularis, Lx., with fragment of Pseudopecopteris nervosa and leaf of Lepidodendron, ... Pittston.
a. Sporocystis, obscure, ... "

11498 (425) Neuropteris angustifolia, Bt., . . Oakwood.
11499 (426) Lepidostrobus variabilis, Ll. & Ht., double nodule, ... Mazon Creek, Ill.
11500 (427) Pseudopecopteris latifolia, Bt., var., ... Cannelton.
11501 (428) Cordaites radiatus, Lx., ... "
11502 (429) Neuropteris cordata, Bt., ... "
a. Same, basilar leaflets, . . . "
b. Cordaianthus communis, Lx., "
c. Punctulate rachis of Pecopteris villosa, Bt., ... "
11503 (430) Unfolding spiropteris of Pecopteris villosa, Bt., ... "
11504 (431) Sphenophyllum schlotheimii, Bt., "
a. Cardiocarpus ellipticus, Lx., "
11505 (432) Neuropteris rarinervis, Bt., half nodule, ... Mazon Creek.
11506 (433) Sigillaria tessellata, Bt., ... Wilkes-Barre.
11507 (434) Calamites ramifer, St., ... Campbell's Ledge.
11508 (435) Sigillaria monostigma, Lx., decorticated, ... Cannelton,
a. Trigonocarpus dawesii, Ll. & H., fragment, ... "
11509 (436) Neuropteris plicata, St., ... "
11510 (437) Sphenopteris communis, Lx., . . Arkansas.
11511 (438) Pecopteris villosa, Bt., ... West Virginia.
11512 (439) Callipteridium membranceum, Lx., Cape Breton.
11513 (440) Opening branch of Annularia Calamitoides (?) Schp., double nodule, ... Mazon Creek, Ill.
11514 (441) Pseudopecopteris mazoniana. Lx., double nodule, ... "
11515 (442) Cyclopteris of Neuropteris rarinervis, Lx., double nodule, "
11516 (443) Stigmarioides linearis, Lx., . . . "
11517 (444) Branch of Calamites ramosus, Bt., "
11518 (445) Pseudopecopteris mazoniana, Lx., "
11519 (446) Cyclopteris of Neuropteris decipiens, Lx., simple nodule, . "
11520 (447) Sphenophyllum oblongifolium, Gein , simple nodule, . . "
11521 (448) Pecopteris erosa, Bt., var., . . . Kansas.
11522 (449) Bornia radiata, Schp., ... Arkansas.

11523 (450) Cordaites grandifolius, Lx., Campbell's Ledge, ... Pittston.
a. (reverse) Calamites ramifer, Stur., ... "
11524 (451) Lepidodendron sternbergii, Bt., . "
11525 (452) Sigillaria defrancii, Bt., ... Olyphant.
a. (reverse) Annularia longifolia, Bt., ... "
b. (reverse) Neuropteris tenuifolia, Bt., ... "
11526 (453) *a.* Sphenopteris hoeninghausii, Bt., ... Dade, Ga.
b. Asterophyllites equisetiformis, var., Erectifolius, Andrews, ... "
11527 (454) Cordaicarpus gutbieri, Geim., . . Cannelton.
11528 (455) Lepidostrobus variabilis, Ll. & H., Pittston.
11529 (456) Pecopteris villosa, Bt., ... West Virginia.
11530 (457) Lepidodendron veltheimianum, Arkansas.
11531 (458) Alethopteris helenae, Lx., var., with Neuropteris tenuifolia, Bt., ... "
a. (reverse) Pseudopecopteris latifolia, Bt., ... "
11532 (459) Alethopteris ambigua, Lx., . . . Olyphant.
a. Neuropteris clarksoni, Lx., . "
(reverse) rachis of ferns, . . . "
11533 (460) Rachopteris tuberculosa, sp. ind., Pittston.
a. (reverse) Rachiopteris & Cordaites, ... "
11534 (461) reverse Lepidodendron rushvillense, Andrews, ... Arkansas.
11535 (462) Sigillaria mamillaris, Bt., ... Olyphant.
11536 (463) Branch of Lepidodendron, with leaves, ... Pittston.
a. Cordaites borassifolius, St., . "
11537 (464) Neuropteris gibbosa, Lx., ... "
a. Neuropteris loschii, Bt., . . "
11538 (465) Pecopteris miltoni, Bt., ... "
a. (reverse) same species fruiting, with leaves of Lepidodendron, ... "
11539 (466) Lepidodendron clypeatum, Lx., . "
a. (reverse) crowded leaves of Lepidodendron, ... "

11540 (467) Lepidodendron clypeatum, Lx., and leaves of Cordaites, . Pittston.
a. (reverse), small branch of Lepidodendron with leaves, "
b. (reverse) leaves of Cordaites communis, Lx., ... Pittston, Pa.
11541 (468) Archaeopteris sphenophyllifolia, Meshoppen, Pa.
11542 (569) Archaeopteris macilenta, Lx., . "
11543 (470) Same, ... "
11544 (471) Cardiocarpus crassus, Lx., . . Campbell's Ledge.
11545 (472) Cardiocarpus ellipticus, St., . . "
11546 (473) Cardiocarpus ellipticus,or crassus, "
11547 (474) Lepidophyllum campbellianum, "
11548 (475) Cardiocarpus ellipticus, Lx., . . "
11549 (476) Lepidocystis fraxiniformis, Lx., . "
a. (reverse) L., vescicularis, "
11550 (477) Pseudopecopteris nervosa, Bt., . "
11551 (478) Cardiocarpus crassus,Lx.,nucleus, "
11552 (479) Top of a Lepidostrobus species, "
11553 (480) Lepidocystis vescicularis, Lx., . "
a. (reverse) Cardiocarpus crassus, Lx., ... "
11554 (481) *a.* Rhabdocarpus emarginatus, "
11555 (482) Cardiocarpus annularis, Lx., . . "
a. Lepidocystis fraxiniformis, "
11556 (483) Same, ... "
a. (reverse) Lepidocystis vescicularis, Lx., ... "
b. Cardiocarpus annularis, Lx., "
11557 (484) *a.* Alethopteris helenæ, Lx., . Arkansas.
b. Cardiocarpus bicuspidatus, St., ... "
(reverse) A. helenæ, and rachis of fern, ... "
11558 (485) Lepidophyllum cultriforme, Lx., "
11559 (486) (reverse) Sphenopteris hoeninghausii, Bt., and its rachis, . "
11560 (487) Cardiocarpus bicuspidatus, St., . "
11561 (488) Pseudopecopteris decipiens, Lx.,Dade, Ga.
11562 (489) Sphenopteris splendens, Lx., . . "
11563 (490) Fragment of a long Lepidostrobus species indeterminable, . . Cannelton, Pa.
11564 (491) Annularia calamitoides, Schp., double nodule, ... Mazon Creek, Ill.

11565	(492)	Pecopteris bucklandi, Bt., double nodule, ...	Mason Creek, Ill.
11566	(493)	Branch of Lepidodendron dichotomum with leaves, simple nodule, ...	"
11567	(494)	Trigonocarpus not determinable, with a coprolithe, with leaves, simple nodule, . .	"
11568	(495)	Cyclopteris leaf of Neuropteris decipiens, with leaves, simple nodule, ...	"
11569	(496)	Pecopteris villosa, Bt., fruiting with leaves, double nodule,	"
11570	(497)	Branch of Lepidodendron with leaves, simple nodule, . .	"
11571	(498)	Rhacophyllum clarksii, Lx., with leaves, simple nodule, . .	"
11572	(499)	Top branch of unopened Annularia, double nodule, . . .	"
11573	(500)	Fragment of Macrostachya infundibuliformis, Schp., . .	"
11574	(501)	Bornia radiata, Schp., with cortex,	Arkansas.
11575	(502)	Asterophyllites gracilis, Lx., . .	"
11576	(503)	Sphenopteris flexicaulis, Lx., . .	"
11577	(504)	Alethopteris serlii, Bt., ...	?
11578	(505)	Lepidodendron modulatum, Lx.,	?
11579	(506)	Sphenopteris splendens, Lx., . .	Clinton, Mo.
		a. (reverse) Asterophyllites fasciculatus, ...	"
11580	(507)	Sternbergia, pith of Cordaites, .	?
11581	(508)	Cordaites communis, Lx., . . .	?
11582	(509)	Base of Calamites cannaeformis,	?
11583	(510)	Sphenopteris hoeinghausii, Bt., ...	Whetstone quarries, Ind.
11584	(511)	Same, ...	"
11585	(512)	Neuropteris smithsii, Lx., . . .	"
11586	(513)	Same, ...	"
11587	(514)	Neuropteris elrodi, Lx., ...	"
11588	(515)	Pseudopecopteris muricata, Bt.,	"
11589	(516)	Same, ...	"
11590	(517)	Same, ...	"
11591	(518)	Same, ...	"
11592	(519)	Same, ...	"

11593 (520) Pseudopecopteris muricata, Bt., Whetstone quarries, Ind.
11594 (521) Same, ... "
11595 (522) Lepidodendron dichotomum, Bt., "
11596 (523) Lepidodendron beltheimianum, "
11597 (524) Lepidodendron goeppertianum, var. modulatum, Presl., . . "
11598 (525) Same, ... "
11599 (526) Same, large spec., ... "
11600 (527) Lepidodendron restitum, Lx., . "
11601 (528) Same, ... "
11602 (529) Archæopteris minor, Lx., from Catskill rocks (Sherwood), . . Tioga Co., Pa.
11603 (530) Same as No. 529, ... "
11604 (531) Same as No. 529, ... "
11605 (532) Same as No. 529, ... "
11606 (533) Same as No. 529, ... "
11607 (534) Same as No. 529, ... "
11608 (535) Same as No. 529, ... "
11609 (536) Pecopteris unita, Bt., fruiting, double nodule, ... Mazon Creek, Ill.
11610 (537) Neuropteris Clarksoni, Lx., simple nodule, ... "
11611 (538) Neuropteris decipiens, Lx., double nodule, ... "
11612 (539) Sphenopteris flaccida, Crepin, from Pocono sandstone, No. X, in Sideling tunnel, C. A. Ashburner, ... Huntingdon Co.
11613 (540) Same, mere fragment, ... " Pa.
11614 (541) Same, apparently very poor, . . "
11615 (542) Knorria, not determinable species, "
11616 (543) A stem or rachis of Fern, ... "
11617 (544) Stigmaria minuta, Lx., ... "
11618 (545) Fragment of large rachis, ... "
11619 (546) Stigmaria minuta, Lx., ... "
11620 (547) Same, fragment, ... "
11621 (548) Stignato-canna volkmaniana?, . . "
11622 (549) Lepidodendron, three fragments not determinable, crushed, "
11623 (550) Archæopteris macilenta, Lx., Prof. I. C. White, ... Meshoppen, Pa.

PERRY COUNTY FOSSILS

COLLECTED IN 1882–3

By E. W. CLAYPOLE.

(To illustrate Report on Perry Co. F2, 1885.)

NOTE.—The first column gives the Current No. of each specimen in the State Cabinet. The second column gives the No. of the "Station" or locality, and (*with a hyphen*) the field No. of the specimen. At the end of each description is given (*in parenthesis*) the number of specimens which carry the same field No. and therefore the same Current No. in the State Cabinet

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Station No. 1. Half a mile south of New Bloomfield, on road to Carlisle. Fossils got from *Hamilton Upper Shale, VIII c.*

Station No. 2. W. Comp's mill, 2½ miles S. E. of New Bloomfield. *Hamilton Upper Shale, VIII c.*

11624 2–1 Eodon bellistriatus, Con. (5).
11625 2–2 Dalmanites boothii, Green (5 specimens).
11626 2–4 Paracyclas lirata, Con. (12).
11627 2–5 Spirifera mucronata, Hall (4).
11628 2–6 Nuculites oblongatus, Con. (2).
11629 2–7 Chonetes lepidus, Hall (4).
11630 2–8 Pleurotomaria capillaria. Hall (1).
11631 2–9 Strophodonta perplana, Con. (1).
11632 2–10 Orthoceras ——— ? (1).
11633 2–11 Discina minuta, Hall (2).
11634 2–12 Leiorhynchus multicostatum, Hall (1).
11635 2–13 Nucula bellistriata, Con. (1).
11636 2–15 Palæoneilo maxima ? Con. (1).
11637 2–16 Streptelasma rectum, Hall (1).
11638 2–17 Palæoneilo emarginata, Con. (1).
11639 2–19 Palæoneilo tenuistriata, Hall (1).
11640 2–20 Chonetes lepida ? Hall (1).

11641 2–21 Nuculites triquetra, Con. (1).
11642 2–22 Cast of Chonetes lepida (1).
11643 2–23 Streptorhynchus chemungensis, var. perversa, Hall (1).
11644 2–24 Pleurotomaria sulcomarginata, Con. (1).
11645 2–25 Eodon bellistriatus, Con. (1).
11646 2–26 Palæoneilo filosa, Con. (1).

Sation No. 3, one mile north of New Bloomfield, in *Hamilton Lower Shale, VIII c.*

11647 (3——) Six specimens, mere fragments, not determinable, and (with one exception) the only fossils got from the *lower* shales of the Hamilton anywhere in the district.

Station No. 4, half a mile north-west of New Bloomfield, on the valley road, in the "*Bloomfield sandstone*" of the *Salina formation, V c.*

11648 (X–4) Leperditia alta, Con. (3).

Station No. 5, at W. Barnett's mill, to S. E., in *Hamilton upper shale, VIII c.*

11649 5–( ) Eighteen specimens, fragments.
11650 5–1 Polypora ————? (1).
11651 5–2 Fenestella ————? (1), with 5–60.
11652 5–3 Loxonema delphicola, Hall (14). These come from above the *Fenestella bed.*
11653 5–6 Tropidoleptus carinatus, Hall (21). One of them with 5–186.
11654 5–8 Dalmanites boothii, Green (9). One, a head, from above the *Fenestella bed.*
11655 5–9 Ptilophyton vanuxemi, Dawson (1).
11656 5–11 Strophodonta perplana, Hall (12, with the next).
11657 5–12 Pleurotomaria trilix, Hall (12 with the last).
11658 5–13 Pleurotomaria capillaria, Hall (—).
11659 5–14 Vitulina pustulosa, Hall (21), below the *Fenestella bed.*

11660 5–15 Eodon tenuistriatus, Hall (1).
11661 5–16 Sanguinolites truncatus, Con. (1).
11662 5–17 Modiomorpha concentrica, Con. (5). (See also 5–127).
11663 5–18 Nucula bellistriata, Con. (1).
11664 5–19 Pleurotomaria capillaria, Hall (6). (See also 5–42).
11665 5–20 Orthonota carinata, Con. (1).
11666 5–21 Strophodonta inæquistriata, Con. (1).
11667 5–22 Chonetes lepidus, Hall (2).
11668 5–23 Discina media, Hall, large variety.
11669 5–24 Spirorbis angulatus, Hall (1).
11670 5–25 undetermined.
11671 5–27 Spirorbis angulatus, Hall (1).
11672 5–28 undetermined (2).
11673 5–29 Phacops rana, Green (20), one of them with 5–68.
11674 5–30 Streptelasma ungula (5).
11675 5–31 Palæoneilo fecunda (2).
11676 5–32 Atrypa spinosa, Hall (1).
11677 5–33 Spirifera medialis, Hall (1) with 5–113.
11678 5–36 Ptilopora striata, Hall (1).
11679 5–37 Spirifera fimbriata, Hall (1) with 5–39.
11680 5–39 undetermined (8).
11681 5–40 Atrypa aspera, Schlotheim (5); and undetermined (13), one with 5–84.
11682 5–41 Strophodonta inæquistriata, Con. (7); and one with 5–83, and 5–84.
11683 5–42 Nucula bellistriata, Con. (6), with 5–47, and 5–87.
11684 5–43 Actinocrinus eucharis, Hall (2).
11685 5–44 Platyceras carinatum, Hall (1).
11686 5–45 a cast of 5–44.
11687 5–46 Lichenella?
11688 5–47 Chonetes lepidus, Hall (21).
11689 5–48 Beyrichia? (2).
11690 5–49 Coleolus acicula, Hall (1).
11691 5–50 Palæoneilo emarginata, Con. (1).
11692 5–51 Spirifera mucronata, Con. (10).
11693 5*a*53 Spirophytum (Taonurus) velum, Van. (2).

11694 5–54 Orthoceras nuntium, Hall (3).
11695 5*a*55 Tæniopora hamiltonensis, Hall (1).
11696 5–56 Leiorhynchus multicostatum, Hall (3); and another with 5–58.
11697 5–57 Ambocoelia umbonata, Hall (1).
11698 5*a*58 Chonetes lepidus, Hall (4).
11699 5–60 Rhynchonella horsfordi, Hall (4).
11700 5–61 Cyrtina hamiltonensis, Hall (1).
11701 5–62 Macrodon hamiltonensis, Hall (2).
11702 5–63 Cypricardinia indenta, Con. (1) with 5–65.
11703 5–64 undetermined (1).
11704 5–65 Spirifera zigzag, Hall (18).
11705 5–66 Pholidops hamiltoniæ, Hall (1).
11706 5–67 Proëtus macrocephalus, Hall (1).
11707 5–68 Ambocœlia umbonata, Hall (7).
11708 5*a*69 Streptorhynchus chemungensis, var. arctostriatum, Hall (1).
11709 5–75 Platyceras attenuatum, Hall (1).
11710 5–76 Ambocœlia umbonata, Hall (1).
11711 5–80 undetermined (1).
11712 5–82 Actinoptera decussata, Hall (1).
11713 5–83 Streptorhynchus chemungensis, var. arctostriatum, Hall (6), one with 5–154.
11714 5–84 Beyrichia punctulifera, Hall (1).
11715 5–85 Platyceras symmetricum, Hall (1).
11716 5–86 Platyceras carinatum, Hall (1).
11717 5–87 Tæniopora exigua, Nich. (4).
11718 5–88 undetermined (2).
11719 5–89 Nuculana (Leda) diversa, Hall (1).
11720 5–90 Bellerophon thalia, Hall (1).
11721 5*a*91 Strophodonta perplana, Hall (1).
11722 5–93 Chonetes lepidus, Hall (1).
11723 5–94 Coleolus tenuicinctus, Hall (1).
11724 5–95 undetermined (3).
11725 5–96 Homolonotus dekayi, Green (2).
11726 5–97 Bellerophon patulus, Hall (1).
11727 5–98 Modiomorpha neglecta? Hall (1).
11728 5*a*99 Homalonotus dekayi (1), in *Hamilton shales, VIII c.*
11729 5–100 Palæoneilo muta, Hall (1).

11730 5–101 Nuculites oblongatus, Con. (4).
11731 5–102 Bellerophon crenistriatus, Hall (1).
11732 5–103 Orthonota undulata, Con. (4).
11733 5–104 Bellerophon leda, Hall (6).
11734 5–106 Productella truncata, Hall (2).
11735 5–107 Nucula lirata, Con. (1).
11736 5–108 Tentaculites gracilistriatus, Hall (5); one with the next.
11737 5–109 Styliola fissurella.
11738 5–110 undetermined.
11739 5–111 undetermined.
11740 5–112 undetermined.
11741 5–113 Palæoneilo maxima, Con. (7).
11742 5–115 undetermined.
11743 5–116 undetermined (12 specimens).
11744 5–117 Dalmanites boothi, Green (9).
11745 5*a*119 Orthis penelope, Hall (1).
11746 5*a*120 Productella spinulicosta, Hall (6).
11747 5–121 undetermined.
11748 5*a*125 Crania hamiltoniæ, Hall (2).
11749 5*a*123 Orthoceras nuntium, Hall (1).
11750 5–127 Spirorbis angulatus, Hall (1) with 5–130.
11751 5–128 undetermined.
11752 5–129 undetermined.
11753 5*a*130 Eodon tenuistriatus, Hall (6).
11754 5–131 undetermined.
11755 5–134 undetermined.
11756 5*a*135 Dalmanites boothi, Green (1).
11757 5*a*136 Loxonema delphicola, Hall (1).
11758 5*a*137 Chonetes coronatus, Hall (1) with Spirorbis.
11759 5*a*138 Orthis vanuxemi, Hall (2).
11760 5–139 uncatalogued.
11761 5–140 uncatalogued.
11762 5–142 uncatalogued.
11763 5–144 uncatalogued.
11764 5*a*145 undetermined.
11765 5*a*147 Eodon bellistriatus, Con. (4).
11766 5*a*149 Aviculopecten orbiculatus, Hall (2).
11767 5–151 undetermined (2).
11768 5*a*152 Cryptonella rectirostra, Hall (2).

11593 (520) Pseudopecopteris muricata, Bt., Whetstone quarries, Ind.
11594 (521) Same, ... "
11595 (522) Lepidodendron dichotomum, Bt., "
11596 (523) Lepidodendron beltheimianum, "
11597 (524) Lepidodendron goeppertianum, var. modulatum, Presl., . . "
11598 (525) Same, ... "
11599 (526) Same, large spec., ... "
11600 (527) Lepidodendron restitum, Lx., . "
11601 (528) Same, ... "
11602 (529) Archæopteris minor, Lx., from Catskill rocks (Sherwood), . . Tioga Co., Pa.
11603 (530) Same as No. 529, ... "
11604 (531) Same as No. 529, ... "
11605 (532) Same as No. 529, ... "
11606 (533) Same as No. 529, ... "
11607 (534) Same as No. 529, ... "
11608 (535) Same as No. 529, ... "
11609 (536) Pecopteris unita, Bt., fruiting, double nodule, ... Mazon Creek, Ill.
11610 (537) Neuropteris Clarksoni, Lx., simple nodule. . . . . "
11611 (538) Neuropteris decipiens, Lx., double nodule, ... "
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11617 (544) Stigmaria minuta, Lx., ... "
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11620 (547) Same, fragment, ... "
11621 (548) Stignato-canna volkmaniana?, . . "
11622 (549) Lepidodendron, three fragments not determinable, crushed, "
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(To illustrate Report on Perry Co. F², 1885.)

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11630 2–8 Pleurotomaria capillaria. Hall (1).
11631 2–9 Strophodonta perplana, Con. (1).
11632 2–10 Orthoceras ——— ? (1).
11633 2–11 Discina minuta, Hall (2).
11634 2–12 Leiorhynchus multicostatum, Hall (1).
11635 2–13 Nucula bellistriata, Con. (1).
11636 2–15 Palæoneilo maxima ? Con. (1).
11637 2–16 Streptelasma rectum, Hall (1).
11638 2–17 Palæoneilo emarginata, Con. (1).
11639 2–19 Palæoneilo tenuistriata, Hall (1).
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11641 2–21 Nuculites triquetra, Con. (1).
11642 2–22 Cast of Chonetes lepida (1).
11643 2–23 Streptorhynchus chemungensis, var. perversa, Hall (1).
11644 2–24 Pleurotomaria sulcomarginata, Con. (1).
11645 2–25 Eodon bellistriatus, Con. (1).
11646 2–26 Palæoneilo filosa, Con. (1).

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11662 5–17 Modiomorpha concentrica, Con. (5). (See also 5–127).
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11667 5–22 Chonetes lepidus, Hall (2).
11668 5–23 Discina media, Hall, large variety.
11669 5–24 Spirorbis angulatus, Hall (1).
11670 5–25 undetermined.
11671 5–27 Spirorbis angulatus, Hall (1).
11672 5–28 undetermined (2).
11673 5–29 Phacops rana, Green (20), one of them with 5–68.
11674 5–30 Streptelasma ungula (5).
11675 5–31 Palæoneilo fecunda (2).
11676 5–32 Atrypa spinosa, Hall (1).
11677 5–33 Spirifera medialis, Hall (1) with 5–113.
11678 5–36 Ptilopora striata, Hall (1).
11679 5–37 Spirifera fimbriata, Hall (1) with 5–39.
11680 5–39 undetermined (8).
11681 5–40 Atrypa aspera, Schlotheim (5); and undetermined (13), one with 5–84.
11682 5–41 Strophodonta inæquistriata, Con. (7); and one with 5–83, and 5–84.
11683 5–42 Nucula bellistriata, Con. (6), with 5–47, and 5–87.
11684 5–43 Actinocrinus eucharis, Hall (2).
11685 5–44 Platyceras carinatum, Hall (1).
11686 5–45 a cast of 5–44.
11687 5–46 Lichenella?
11688 5–47 Chonetes lepidus, Hall (21).
11689 5–48 Beyrichia? (2).
11690 5–49 Coleolus acicula, Hall (1).
11691 5–50 Palæoneilo emarginata, Con. (1).
11692 5–51 Spirifera mucronata, Con. (10).
11693 5*a*53 Spirophytum (Taonurus) velum, Van. (2).

11694 5–54 Orthoceras nuntium, Hall (3).
11695 5*a*55 Tæniopora hamiltonensis, Hall (1).
11696 5–56 Leiorhynchus multicostatum, Hall (3); and another with 5–58.
11697 5–57 Ambocoelia umbonata, Hall (1).
11698 5*a*58 Chonetes lepidus, Hall (4).
11699 5–60 Rhynchonella horsfordi, Hall (4).
11700 5–61 Cyrtina hamiltonensis, Hall (1).
11701 5–62 Macrodon hamiltonensis, Hall (2).
11702 5–63 Cypricardinia indenta, Con. (1) with 5–65.
11703 5–64 undetermined (1).
11704 5–65 Spirifera zigzag, Hall (18).
11705 5–66 Pholidops hamiltoniæ, Hall (1).
11706 5–67 Proëtus macrocephalus, Hall (1).
11707 5–68 Ambocœlia umbonata, Hall (7).
11708 5*a*69 Streptorhynchus chemungensis, var. arctostriatum, Hall (1).
11709 5–75 Platyceras attenuatum, Hall (1).
11710 5–76 Ambocœlia umbonata, Hall (1).
11711 5–80 undetermined (1).
11712 5–82 Actinoptera decussata, Hall (1).
11713 5–83 Streptorhynchus chemungensis, var. arctostriatum, Hall (6), one with 5–154.
11714 5–84 Beyrichia punctulifera, Hall (1).
11715 5–85 Platyceras symmetricum, Hall (1).
11716 5–86 Platyceras carinatum, Hall (1).
11717 5–87 Tæniopora exigua, Nich. (4).
11718 5–88 undetermined (2).
11719 5–89 Nuculana (Leda) diversa, Hall (1).
11720 5–90 Bellerophon thalia, Hall (1).
11721 5*a*91 Strophodonta perplana, Hall (1).
11722 5–93 Chonetes lepidus, Hall (1).
11723 5–94 Coleolus tenuicinctus, Hall (1).
11724 5–95 undetermined (3).
11725 5–96 Homolonotus dekayi, Green (2).
11726 5–97 Bellerophon patulus, Hall (1).
11727 5–98 Modiomorpha neglecta? Hall (1).
11728 5*a*99 Homalonotus dekayi (1), in *Hamilton shales, VIII c.*
11729 5–100 Palæoneilo muta, Hall (1).

11730 5–101 Nuculites oblongatus, Con. (4).
11731 5–102 Bellerophon crenistriatus, Hall (1).
11732 5–103 Orthonota undulata, Con. (4).
11733 5–104 Bellerophon leda, Hall (6).
11734 5–106 Productella truncata, Hall (2).
11735 5–107 Nucula lirata, Con. (1).
11736 5–108 Tentaculites gracilistriatus, Hall (5); one with the next.
11737 5–109 Styliola fissurella.
11738 5–110 undetermined.
11739 5–111 undetermined.
11740 5–112 undetermined.
11741 5–113 Palæoneilo maxima, Con. (7).
11742 5–115 undetermined.
11743 5–116 undetermined (12 specimens).
11744 5–117 Dalmanites boothi, Green (9).
11745 5*a*119 Orthis penelope, Hall (1).
11746 5*a*120 Productella spinulicosta, Hall (6).
11747 5–121 undetermined.
11748 5*a*125 Crania hamiltoniæ, Hall (2).
11749 5*a*123 Orthoceras nuntium, Hall (1).
11750 5–127 Spirorbis angulatus, Hall (1) with 5–130.
11751 5–128 undetermined.
11752 5–129 undetermined.
11753 5*a*130 Eodon tenuistriatus, Hall (6).
11754 5–131 undetermined.
11755 5–134 undetermined.
11756 5*a*135 Dalmanites boothi, Green (1).
11757 5*a*136 Loxonema delphicola, Hall (1).
11758 5*a*137 Chonetes coronatus, Hall (1) with Spirorbis.
11759 5*a*138 Orthis vanuxemi, Hall (2).
11760 5–139 uncatalogued.
11761 5–140 uncatalogued.
11762 5–142 ncatalogued
11763 5–144 uncatalogued.
11764 5*a*145 undetermined.
11765 5*a*147 Eodon bellistriatus, Con. (4).
11766 5*a*149 Aviculopecten orbiculatus, Hall (2).
11767 5–151 undetermined (2).
11768 5*a*152 Cryptonella rectirostra, Hall (2).

11769 5*a*153 Tropidoleptus carinatus, Hall (30).
11770 5–154 Eodon tenuistriatus, Hall (1).
11771 5–155 Spirifera granulifera, Hall (1).
11772 5–156 Chonetes setigerus, Hall (9).
11773 5–157 undetermined.
11774 5–158 Atrypa reticularis, Linn. (1).
11775 5–159 Eodon bellistriatus, Con. (1).
11776 5–160 undetermined.
11777 5*a*161 Actinoptera subdecussata, Hall (4).
11778 5*a*162 Palæoneilo plana, Hall (1).
11779 5*a*163 Coleolus aciculus, Hall (1).
11780 5–165 undetermined.
11781 5–167 Modiomorpha alta, Con. (1).
11782 5–168 Terebratula lincklæni, Hall (4).
11783 5–171 Crania hamiltoniæ, Hall (2).
11784 5–172 Tæniopora undata (1).
11785 5–173 Aulopora tubæformis, Goldf. (3).
11786 5–174 Palæoneilo elongata, Hall (1).
11787 5–176 undetermined (3).
11788 5–186 Bellerophon patulus, Hall (1).
11789 5–187 Modiomorpha complanata, Hall (1).
11790 5–188 undetermined.
11791 5–190 undetermined.
11792 5*a*192 Discina seneca? Hall (1).
11793 5–193 undetermined (6).

Station No. 6, at Clark's mill, 2½ miles north-west of New Bloomfield, in the *Lower Helderberg* (upper shale beds) *VI.* Note, some are merely marked 6; others S–6 (Station 6); others X–6 (meaning also station 6) in Prof. Claypole's field note book. Many are large slabs for museum cases; those marked with a letter are mostly duplicates of well known fossils, or have tickets, or are undetermined.

11794 6— twelve unnamed specimens.
11795 6–1 Lingula spatiosa, Hall (1).
11796 6–4 Atrypa reticularis, Hall (1).
11797 6–5 Spirifera saffordi, Hall (a box full, which should be marked 6–30).
11798 6–6 Rhynchonella nucleolata Hall (3).

11799 6–8 Meristella lævis, Vanux (2).
11800 6–9 Reńssellæria mutabilis, Hall (6).
11801 6–12 Orthoceras longicameratus, Hall (2).
11802 6–13 Strophomena rugosa, Dalman (2).
11803 6–14 Chætetes abruptus, Hall (1).
11804 6–15 Beyrichia granulata, Hall (1).
11805 6–16 undetermined.
11806 S6— Tentaculites, Gyracanthus, Beyrichia notata } on the same slabs { (7) (4) (6)
11807 S6— Orthoceras longicameratum (5) (9).
11808 S6— Calymene ———? (3).
11809 S6— Lepidocystites gebhardi (2).
11810 S6–2 Tentaculites gyracanthus (1).
11811 6–15 Beyrichia granulata, Hall (2).
11812 X6 Aulopora? (5).
11813 X6 undetermined (12).
11814 X6 Stromatopora, or Astrocerium (2).
11815 X6 Trematospira, or Cladopora (1).
11816 X6 Discina ampla (1).
11817 X6 Trematopora? (4).
11818 X6 Beyrichia notata (6).
11819 X6 Strophomena woolworthana? (1).
11820 X6 Atrypa reticularis (2).
11821 X6 Astrocerium in shale (1).

Station No. 7, Limestone ridge, one to two miles west of New Bloomfield, in *Lower Helderberg upper shaly beds, VI.*

Station No. 8, north of Oliver Rice's house, one mile east of New Bloomfield, in *Lower Helderberg upper shaly beds, VI.*

11822 X–8 undetermined (2).

Station No. 9.

Station No. 10.

11823 X–10 Discina discus, in shale (18).

11824 X–10 unnamed.
11825 X–10 Chætetes? in shale.
11826 X–10 Meristella lævis (small box full).

Stations No. 11, *Lower Helderberg chest beds* at various places in Perry county.

11827 S–11 unnamed (4).
11828 11–1 Spirifera macropleura, Con. (1).
11829 11–5 Dalmanites pleuroptyx, Green (1).
11830 11–6 Rhynchonella vellicata, Hall (1).
11831 11–7 Platyceras spirale, Hall (2).
11832 11–9 Meristella lævis? Van. (3).

Stations No. 12, on the outcrop of the *Oriskany sandstone, VII*, in various parts of Perry county.

11833 S–12 Orthis hipparionyx (1).

Station No. 13, at quarry north of Mr. Arnold's house, one mile west of New Bloomfield, in *Lower Helderberg upper shaly beds, VI.*

11834 S–13 unnamed (2).
11835 X–13 Meristella bella, and Meristella lævis (1); with another.
11836 X–13 Meristella bella and Tentaculites gyracanthus, Eaton (1); with another.
11836 X–13 Murchisonia (1).

Station No. 14, Limestone ridge, half a mile N. N. E. of New Bloomfield, in *Lower Helderberg upper shaly beds, VI.*

11837 S–14 unnamed (1).
11838 X–14 Leptæna rugosa (2).
11839 X–14 various (8).
11840 X–14 Atrypa reticularis (1).

Station No. 15, north of J. Powers, two miles west of New Bloomfield, in *Lower Helderberg upper shaly beds.*

11841 S–15 Leptæna rugosa (8).
11842 X–15 Chætetes (2) and one unnamed.
11843 X–15 Meristella lævis, Van. Meristella bella, Hall (2).

Station No. 16, Limestone ridge, two miles west of New Bloomfield, in *Lower Helderberg upper shaly beds, VI.*

11844 X–16 Tentaculites gyracanthus, Eaton (2).
11845 X–16 Discina discus (1).
11846 X–16 undetermined.

Station No. 17, three hundred yards north-east of Station No. 14, and in the same rocks.

Station No. 18, near residence of the Misses Barnett, New Bloomfield, in the *Marcellus limestone* (*Upper Helderberg*) *VIII, a, b.*

11847 S–18 unnamed (2).
11848 18–1 Atrypa reticularis, Linn. (2).
11849 18–2 Ambocoelia umbonata, Hall (9).
11850 18–3 Leperditia punctulifera, Hall (2).
11851 18–6 Leperditia punctulifera, Hall (1).
11852 18–10 Atrypa reticularis, Linn. (1).
11853 18–12 Dalmanites myrmecophorus? Green (1).

Station No. 19, half a mile north-east of Station No. 14, in *Lower Helderberg upper shaly beds, VI.*

11854 X–19 Murchisonia (1).
11855 X–19 unnamed (1) and another unnamed.

Station No. 20, west of the old Juniata Furnace, Centre township in *Lower Helderberg upper shaly beds, VI.*

11856 X–20 Megambonia aviculoidea (2).

11857 X–20 Discina discus (2).
11858 X–20 unnamed (1).
11859 S–20 unnamed (1).

Station No. 21, north of Mr. O. Rice's school house, Centre township, in *Lower Helderberg uppr shaly beds, VI.*

11860 S–21 unnamed (1).
11861 X–21 unnamed (2).

Station No. 22, near old Juniata ore works, *Lower Helderberg upper shaly beds, VI.*

Station No. 23, O. Rice's school house, Centre township, *Lower Helderberg upper shaly beds, VI.*

Station No. 24, at Thunder hill, Honey creek station, near Lewistown, *Hudson river shale, III b.*

11862 X–24 unnamed (3).
11863 X–24 Leptæna sericea, Orthis testudinaria, Strophomena alternata, Murchisonia, Calymene, &c., } (1).
11864 X–24 Strophomena alternata (2).
11865 X–24 unnamed (4).
11866 X–24 Leptæna sericea (2).
11867 X–24 Calymene callicephala (1).

Station No. 25, near Reedsville, Lewistown, in *Hudson river slate, III b.*

11868 X–25 unnamed (1).
11869 S–25 unnamed (a small box full).

Station No. 26, top of hill west of Newport, in *Chemung-Catskill beds, VIII–IX.*

11870 26–2 Holoptychius americanus, Leidy (1).
11871 26–4 Spirifera mesostrialis (9).

Station No. 27, opposite Newport, in *Chemung strata, VIII g*

11872 27–(–) unnamed (2) and (6 in a box).
11873 27*a* unnamed (1).
11874 27–2 Strophodonta demissa (7 in box).
11875 27–4 Atrypa reticularis, Linn (4).
11876 27–6 Spirifera mesocostalis, Hall (2).
11877 27–7 Orthis impressa, Hall (1).
11878 27–8 Leiorhynchus mesocostalis, Hall (7).
11879 27–10 Spirifera mesocostalis, Hall (4).
11880 27–11 Productella hirsuta, Hall (5) and a box full of the same.
11881 27–12 Lyriopecten priamus, Hall (2).
11882 27–13 Lyriopecten macronotus, Hall (1).
11883 27–14 unnamed (1).
11884 27–15 Rhynchonella contracta, Hall (1).
11885 27–16 Strophodonta demissa, Con. (1).
11886 27–17 Cryptonella eudora, Hall (3).
11887 27–21 unnamed (1).
11888 27–(–) unnamed (1).

Station No. 28, Penn ridge between Newport and Millerstown, in *Chemung strata, VIII g.*

11889 28–4 Lepidodendron chemungense? (1).
11890 28–(–) vegetable remains, Rope ferry (in box).

Station No. 29, on Penn ridge between Newport and Baileysburg, *Chemung, VIII g.*

11891 29–1 Stictopora meeki (1).
11891 29–2 Cyrtina hamiltonensis, Hall (4).

Station No. 30, two miles south-east of New Bloomfield, *Chemung, VIII g.*

Station No. 31, Everhartt's lime kiln, between New Bloomfield and Newport, *Lower Helderberg (Lewistown) limestone, VI.*

Station No. 32, Rope Ferry, Oliver, *Chemung, VIII g.*

11892 32–2 plant remains.
11893 32–C plant remains (3).

Station No. 33, Duncan's island, one to two miles north of Junction farm, Watts, *Chemung, VIII g.*

11894 33–4 Cryptonella? (1).

Station No. 34, two and a half miles south of Millerstown, west side of the Juniata river, *Chemung, VIII g.*

11895 34–1 Orthis impressa, Hall (1).

Station No. 35, Penn ridge between aqueduct and bridge, Penn township, *Chemung and Catskill, VIII g and IX.*

Station No. 36, King's mill, Penn township, *Catskill IX.*

11896 36–1 Bothriolepis taylori, Hall (a scale).
11897 36–4 ———? (3).
11898 36–5 Spirifera mesostrialis, Hall (2).
11899 36–5 ——— (8).
11900 36–7 ——— (5).
11901 36–8 fish bone (1).
11902 36–9 fish tooth (2).
11903 36–10 ——— (1).
11904 36–11 unnamed (1).
11905 36–A coal plants (a box full).
11906 36–A Calamites like bistriatus, or disjunctus, (1).
11907 36–B unnamed (1).
11908 36–E6 unnamed (1).
11909 36–G1 Holoptychius, *Lower Catskill* (1).
11910 36–G1 Bothriolepis, *Lower Catskill* (1).
11911 36–G2 Holoptychius and Bothriolepis (1).
11912 36–G3 Coprolites? coneretions in fish bed (2).
11913 S–36 cast of Holoptychius plate (1).
11914 36–(—) fish scale, *Catskill.*
11915 36–(—) fish scale and tooth (2).
11916 36–(—) fish scale (1).

11917 36–(—) fish scale (1).
11918 36–(—) fish plates (3).
11919 36–(—) fish scale (1).
11920 36–(—) Grammysia elliptica (1).
11921 36–(—) fish scale, Catskill (1).
11922 36–(—) fish scale, Catskill (1).
11923 36–(—) fish scale, Catskill (1).
11924 36–(—) fish tooth on scales, Catskill (1).

Station No. 37, two and a half miles north of Liverpool, *Chemung, VIII g.*

11925 37–1 Spirifera mesocostalis, Hall (1).
11926 37–2 Productella hirsuta, Hall (3).
11927 37–3 Leiorhynchus globuliforme, Hall (2).
11928 37–4 undetermined (1).
11929 37–5 Spirifera mesostrialis, Hall (4).
11930 37–6 Cyrtina hamiltonensis, Hall (1).
11931 37–7 Modiomorpha concentrica (1).
11932 37–8 Actinoptera perstrialis, Hall (1).
11933 37–9 Spirifera mesocostalis, Hall (2).

Station No. 38, mouth of Mohontongo creek, SNYDER Co., PA. in *Lower Helderberg, upper shaly beds, VI.*

11934 38–(—) undetermined (2).
11935 38–(—) undetermined (2).

Station No. 39, Middle ridge, south slope, on road north from New Bloomfield, in *Chemung rocks, VIII g.*

11936 39–1 Productella hersuta, Hall (5).
11937 39–2 undetermined (1).
11938 39–3 Spirifera mesocostalis, Hall (5).
11939 39–4 Cyrtina hamiltonensis, Hall (4).
11940 39–5 Aulopora tubæformis, Goldf. (2).
11941 39–6 Strophodonta perplana, Con. (3).
11942 39–8 Orthis impressa, Hall (4).
11943 39–9 Orthis carinata, Hall (3).
11944 39–10 Atrypa reticularis, Linn. (3).
11945 39–11 Palæoneilo filosa, Con. (3).
11946 39–13 Sanguinolites ventricosa, White and Whit. (1).

Station No. 40, Slipping Rocks, west of Mexico P. O., on Penn. R. R., *Marcellus limestone, VIII a, b* and also *Lower Helderberg upper shaly beds, VI.*

11947 40–12 Dalmanites, etc. (10) and (6 others unnamed).
11948 S–40 unnamed (3) (1) (2) (5) (7)=(18).
11949 S–40 from the shales, *VI* (6).
11950 40–8 unnamed (small box full).
11951 S–40 unnamed (small box full).
11952 40–11 unnamed (half box full).
11953 S–40 Lingula spatulata? (3).

Station No. 41, north of Patterson station, Penn. R. R., *Clinton? V a.*

Station No. 42, south of Patterson, *Clinton? V a.*

Station No. 43, one mile above Shermansdale on Sherman's creek, *Catskill, IX.*

Station No. 44, three miles south of New Bloomfield, *Hamilton sandstone, VIII c.*

Station No. 45, one mile north of New Bloomfield, *Lower Helderberg upper shaly beds, VI.*

Station No. 46, Millerstown fossil ore works, *Clinton, V a.*

Station No. 47, Bear's lime quarry, Centre township, *Lower Helderberg (Lewistown) limestone, VI.*

11954 47–(—) Corals, mostly (7).

Station No. 48, Smith's quarry, in Sandy Hollow, Spring township, *Marcellus lime. Cherts beds, Lime shale, VIII a, b.*

11955 48– unnamed specimens (31).
11956 48– Specimens (small box full).

11957 48–2 Phacops rana, Green (2) at the base of the *Hamilton, VIII c.*
11958 48–3 Atrypa reticularis? Linn. (2) *Marcellus limestone, VIII a, b.*
11959 48–4 Leiorhychus limitare, Van. (1) *Marcellus shale, VIII b.*
11960 48– large specimens (8).
11961 S–48 unnamed (3).

Station No. 49, Montebello narrows, north end, Miller township, *Lower Helderberg upper shaly beds, VI.*

11962 50– pebbles in a box.
11963 50*a*1 Bothriolepis taylori (16).
11964 50*a*2 Bothriolepis taylori (1).
11965 50*a*6 unnamed (1).
11966 50*a*7 Coprolites? (4).
11967 50–8 Schizodus rhombeus, Hall (6).
11968 50–8 and 28 unnamed (2).
11969 50–12 Sanguinolites rigidus? W. & W. (1).
11970 50–13 Goniophora chemungensis, Van. (4).
11971 50–16 unnamed (1).
11972 50–18 unnamed (1).
11973 50–20 Grammysia elliptica, Hall (2).
11974 50–24 and 25 unnamed (1).
11975 50–26 Schizodus rhombeus, Hall (2).
11976 50–27 undetermined (1).
11977 50–28 Palæoneilo barrisii, W. & W. (1).
11978 50–30 unnamed (2).

Station No. 51, near King's mill, Penn township, *Chemung and Catskill, VIII g and IX.*

11979 51–3 unnamed (3).
11980 51–4 Grammysia elliptica, Hall (3).
11981 51–4B unnamed (1).
11982 51–4 unnamed (1).
11983 51–5 same as 51–5 (1).
11984 51–6 same as 51–6 (3).
11985 51–7 unnamed (3).

11986 51–9 Leptodesma potens, Hall (1).
11987 51–10 Schizodus rhombeus, Hall (9).
11988 51–14 Cyclonema concinna, Hall (1).
11989 51–19 Sanguinolites ———— ? (1).
11990 51–21 Schizodus rhombeus, Hall (1).
11991 51–25 Rhynchonella ———— ? (1).
11992 51–26 Lyriopecten priamus, Hall (1).
11993 51–27 Goniophora chemungensis, Van. (1).
11994 51–28 Spirifera disjuncta, Sby. (2).

Station No. 52, near No. 51.

Station No. 53, New Bloomfield road to Carlisle, one to two miles south of N. B. *Chemung rocks, VIII g.*

11995 53– unnamed (1).
11996 53–3 Productella hirsuta, Hall (1).
11997 53–6 Rhynchonella contracta, Hall (5).
11998 53–8 Leiorhynchus mesocostale, Hall (1)
11999 53–12 Aulopora tubæformis, Goldf. (2).
12000 53–13 Orthis impressa, Hall (1).
12001 53–14 Strophodonta perplana, Con., Var. parva (new variety) (1).
12002 53–17 Rhynchonella contracta, Hall (1).
12003 53–18 Atrypa reticularis, Linn. (1).
12004 53–19 Strophodonta perplana, Var. nervosa, Hall (3).
12005 53–20 Spirifera mesostrialis, Hall (7).
12006 53–22 Cyrtina hamiltonensis (1).
12007 53–23 Rhynchonella contracta (1).
12008 53–25 Spirifera mesocostalis, Hall (2).
12009 53–26 Orthoceras demus, Hall (1).
12010 53B–1 Orthis impressa, Hall (1).
12011 53B–3 see above (1).
12012 53C–2 Spirifera mesostrialis, Hall (1).
12013 53C–7 Atrypa reticularis, Linn. (1).
12014 53C–10 Palæoneilo filosa, Con. (1).

Station No. 54, Jericho school house near New Bloomfield. *Hamilton upper shale, VIII c.*

12015 54– unnamed (1).

12016 54–1 Tropidoleptus carinatus, Hall (9).
12017 54–3 Homalonotus dekayi, Green (1).
12018 54–4 Strophodonta perplana, Con. (2).
12019 54–5 Spirifera zigzag, Hall (1).
12020 54–6 Orthis penelope. Hall (3).
12021 54–7 unnamed.
12022 54–11 Nautilus (Gyroceras) liratus (1).
12023 54–12 Chonetes setigerus, Hall (1).

Station No. 55, Garber's quarry, Falling Spring, *Lower Helderberg limestone and upper shaly beds, VI.*

12024 55– Corals mostly (15 specimens).

Station No. 56, Rattlesnake hill cross roads, 3 miles south of New Bloomfield, in *Hamilton sand. and upper shales, VIII c.*

12025 56–2 Spirifera medialis, Hall (5).
12026 56–3 Spirifera acuminata, Con. (1).
12027 56–4 Spirifera mucronata, Con. (1).
12028 56–5 Glyptodesma erectum, Con. (1).
12029 56–7 Spirifera medialis, Hall (1).
12030 56–8 Tentaculites attenuatus, Hall (1).

Station No. 57, Junkin's farm, 5 miles south of New Bloomfield, Carroll, *Chemung and Catskill, VIII–IX.*

12031 57–3 Schizodus quadrangularis, Hall (2).
12032 57–9 unnamed (1).
12033 57–13 Modiomorpha subalata, Con. (3).
12034 57–14 unnamed (2).
12035 57–16 undetermined (2).
12036 57–17 Spirifera mesocostalis, Hall (7).
12037 57–19? Leiorhynchus mesocostale? [*Actenoptera perstrialis?*]
12038 57–20 Productella hirsuta, Hall (1).
12039 57–22 Ectinodesma birostratum, Hall (1).
12040 57–23 Actinoptera perstrialis (1).
12041 57–25 Schizodus rhombeus, Hall (1).
12042 57–26 Palæoneilo constricta, Hall (1).
12043 57–27 Cyrtina hamiltonensis, Hall (1).

12044 57–28 Cryptonella eudora, Hall (3).
12045 57–29 Palæoneilo constricta, Hall (1).
12046 57–30 unnamed.
12047 57–31 undetermined.
12048 57–32 Productella hirsuta, Hall (2).
12049 57–33 with 30, 31, unknown (1).
12050 57–34 unknown (1).
12051 57–35 Stictopora meekii (1).
12052 57–36 Orthis impressa, Hall (1).
12053 57–37 Palæoneilo constricta, Hall (2).
12054 57–38 same as 16.
12055 57–39 Tentaculites spicula, Hall (3).
12056 57–40 Grammysia elliptica, Hall (1).
12057 57–45 Cyrtina hamiltonensis, Hall (3).
12058 57–46 Leiorhynchus mesocostale, Hall (2).
12059 57–47 Productella lachrymosa, Hall (3).
12060 57–48 Spirifera mesocostalis, Hall (5).
12061 57–49 Ambocœlia umbonata, Var? Hall (1).
12062 57–51 Limoptera macroptera, Con. (5).
12063 57–63 unnamed (2).
12064 57–64 Modiomorpha catskillensis, Van (1).
12065 57–65 with 48.
12066 57–D large specimen.

Station No. 58, F. W. Gibson's, Shermansdale, *Lower Helderberg lime shales, VI* (34 large specimens).

12067 58–
12068 58–
12069 58–
12070 58–
12071 58–
12072 58–
12073 58–
12074 58–
12075 58–
12076 58–
12077 58–
12078 58–
12079 58–

12080	58–	
12081	58–	
12082	58–	
12083	58–	
12084	58–	
12085	58–	
12086	58–	
12087	58–	
12088	58–	
12089	58–	
12090	58–	
12091	58–	
12092	58–	
12093	58–	
12094	58–	
12095	58–	
12096	58–	
12097	58–	
12098	58–	
12099	58–	
12100	58–	

Station No. 59, Pisgah hill top, opposite Station No. 58 *E*, *Oriskany*, *VII*; *a*, *Marcellus limestone*, *VIII a, b*; *b*, *Hamilton sandstone*, *VIII c.*

12101	59–1	Phacops rana, Green (1).
12102	59–6	Spirifera mucronata, Con. (2).
12103	59–6	Renssellæria (7).
12104	59–6	unnamed (7).
12105	59–6	a cast in wax (1).
12106	59–9	Spirifera mucronata } (18 in all).
12107	59–9	Renssellæria. }
12108	59–10	Spiriferia medialis, Hall (3).
12109	59–11	unknown (1).
12110	59–12	Tentaculites attenuatus, Hall (3).
12111	59–17	Chonetes coronatus, Con. (2).
12112	59–18	Actinodesma subrectum, Whitf. (2).
12113	59–18	casts in wax (3).
12114	59–19	same as 59–6.

12115 59B–(—) unnamed.
12116 59B–4 Actinodesma subrectum (3).
12117 59B–5 Spirifera medialis (1).
12118 59B–18 Actinodesma subrectum (5).
12119 59–(?) unnamed.

Station No. 60, Waggoner's mill, near Centre, *Clinton, V a and Salina, V c.*

12120	60–(—)		(5).
12121	60–(—)		(4).
12122	60–(—)		(10).
12123	60–(—)		(4).
12124	60–(—)		(1).
12125	60–(—)	Lingula oblonga, Conrad	(3).
12162	60–(—)		(2).
12127	60–(—)		(1).
12128	60–(—)	Beyrichia notata, Hall	(2).
12129	60–(—)		(2).
12130	60–(—)		(1).
12131	60–1	Atrypa congesta, Con. (2).	
12132	60–2	Orthoceras (1).	
12133	60–3	Rensselæria æquiradiata, Con. (1).	
12134	60–4	Rhynchonela emacerata, Hall (1).	
12135	60–5	Pyrenomoeus cuneatus, Hall (2).	

Station No. 61, on road west of Centre, in *Salina gray shales, V c.*

Station No. 62, on the Buck hills, south of Germantown, from the *Clinton ore sand rock, V a.*
12136 S–62 Chonetes cornutus, Hall (1).

Station No. 63, Conecocheague mountain, north slope into Horse valley; from *Hudson river slate III b*, or the base of the *Medina I V a.*

Station No. 64, Shermandale mill, from *Chemung and Catskill rocks, VIII–IX.*

12137 64–( ) unnamed (5 specimens).
12138 64–3 unnamed (2).
12139 64–4 Stictopora meekii (1).
12140 64–5 Orthis impressa, Hall (1).
12141 64–7 unnamed (1).
12142 64–8 Orthis tioga? Hall (1).
12143 64–11 unnamed (1).
12144 S–64 Lingula regia and plant remains (1).
12145 S–64 Beyrichia (1).

Station No. 65, near Drumgold's tannery, Carroll township, from fragment of *Hamilton sandstone* (not in place) *VIII c.*

Station No. 66, specimens from *Ithaca, N. Y.*, named by Prof. H. S. Williams. From *Chemung strata, VIII g.*

12146 66–2 unnamed (1).
12147 66–3 Palæoneilo filosa, Con. (1).
12148 66–5 Crania hamiltoniæ? Hall, var. recta (1).
12149 66–6 unknown.

Station No. 67, Monroetown bridge, *Leroy, Bradford Co., Pa.*, from *Catskill rocks, IX.*

Station No. 68, opposite *Bloomsburg*, on the North Branch Susquehanna river; from *Hamilton strata VIII c* (those marked *d* are from *Chemung strata, VIII g*).

12150 68–? *d* Pterinea from *Chemung* (1).
12151 68–( ) unnamed.
12152 68–2 Phacops rana, Green (5).
12153 68–3 Leiorhynchus mesocostale, Hall (3).
12154 68–4 Nucula linciolata, Hall (1).
12155 68–5 Spirifera mesostrialis, Hall (3).
12156 68–*d* Chonetes lepidus, Hall (1) *Hamilton.*

12157 68–7 Eodon bellistriatus, Con. (1).
12158 68–9 Spirifera mesocostalis, Hall (8).
12159 68–11 Atrypa reticularis, Linn. (8).
12160 68–12 Ambocœlia umbonata, Hall (1).
12161 68–13 Streptelasma rectum, Hall (2).
12162 68–17 Leiopteria dekayi, Hall (1).
12163 68–19*d* Modiolopsis concentrica, Con. (1) *Ham.*
12164 68–20 Productella hirsuta, Hall (2).
12165 68–21 Leiorhynchus mesocostale, Hall (2).
12166 68–22 Actinoptera birostrata (3).
12167 68–22 unnamed (1).
12168 68–25 with 68–9 (3).
12169 68–27 undetermined (1).
12170 68–28 undetermined (1).
12171 68–40 Aulopora tubæformis, Goldf. (1).
12172 68–41 undetermined (1).
12173 68–42 with 68–40.
12174 68–43 Strophodonta perplana, Con. (10).
12175 68–44 with 68–40 (2).
12176 68–45 undetermined (2).
12177 68–46 undetermined (2).
12178 68–48 *d* Cyrtina hamiltonensis, Hall (1).
12179 68–49 with 68–11, undetermined (1).
12180 68*a*5 and 9, Spirifera mesostrialis, Hall (1).
12181 68*a*5 and 48, *d*, Cyrtina hamiltonensis, Hall (2).
12182 68*a*15 Orthis impressa, Hall (5).
12183 68*a*29 Spirifera mesostrialis, Hall (12).
12184 68a29 and 48 *d* Cyrtina hamiltonensis, Hall (2).
12185 68*B*–2 Phacops rana, Green (1).
12186 68B–30 Atrypa aspera, Schloth (4).
12187 68B–30 with 33.
12188 68B–31 Ambocœlia umbonata, Hall (3).
12189 68B–32*d* Spirifera fimbriata, Hall (1).
12180 68B–33 Spirifera ———— ? (1).
12181 68B–34 Orthis vanuxemi, Hall (1).
12182 68B–35 Chonetes setigerus, Hall (2).
12183 68B–36 unnamed (3).
12184 68B–37 unnamed (1).
12185 68B–38 Streptelasma rectum. Hall (box half full).

Station No. 69, west of *Leroy, Bradford Co., Pa.*, from *Chemung strata, VIII g.*

12186 69–(—) unnamed (1).
12187 69–2 Rhynchonella contracta, Hall (2).
12188 69–3 Productella lachrymosa, Hall (3).
12189 69D–1 Grammysia elliptica, Hall (1).
12190 69E–1 unnamed (6).
12191 69F–() Spirifera ———— ? (6).
12192 69F–3 Productella lachrymosa, Hall (13).
12193 69F–5 unnamed (1).
12194 69F–6 Spirifera mesocostolis, Hall (4).
12195 69F–8 Orthis impressa, Hall (1).

Station No. 70, north of *Leroy, Bradford Co., Pa., Chemung strata, VIII g.*

12196 70–10 Pterinea? (1).
12197 70*a*4 Ambocœlia umbonata, Hall (4).
12198 70*a*6 Cryptonella eudora, Hall (1).
12199 70a9 Spirifera disjuncta, Sby. (1).
12200 70B– unnamed (1).
12201 70B–1 unnamed (1).
12202 70B–3 Spirifera mesocostalis, Hall (3).
12203 70B–5 Rhynchonella contracta, Hall (1).
12204 70B–7 Strophodonta cayuta, Hall (1).
12205 70B–8 Atrypa aspera, Schloth (1).

Station No. 71, near *Leroy, Bradford Co., Pa., a, Chemung VIII g; b, Catskill, IX.*

12206 71–1 Schizodus rhombeus, Hall (1).
12207 71–3x10 Ambocœlia umbonata, Hall (3).
12208 71–5 Cryptonella eudora, Hall (5).
12209 71*S*5 unnamed from Gulf Brook (3).
12210 71–6 Spirifera disjuncta, Sbg. (3).
12211 71–10x3 Spirifera mesoscostalis and *fish plate* (1).
12212 71–13 Actinoptera zeta, Hall (1).
12213 71–15 Leiopteria bigsbyi, Hall (1).

Station No. 72, near TOWANDA, BRADFORD Co., Pa., from *Chemung strata, VIII g.*

12214 72–1 Aviculopecten pecteniformis, Con. (1).

Station No. 73, one mile east of Sta. No. 2, from *Chemung strata, VIII g.*

12215 73–( ) unnamed (1).
12216 73–1 Orthis impressa, Hall (4).
12217 73–3 Rhynchonella contracta, Hall (1).
I2218 73–4 unnamed (1).
12219 73–5 Spirifera mesostrialis, Hall (1).
12220 73–7 Stictopora meekii (1).
12221 73–C1 Orthis impressa, Hall (6).

Station No. 74, Soap hill, between New Bloomfield and New port, in *Hamilton upper shales, VIII c.*

12222 74–20 Spirifera fimbriata, Hall (1).
12223 74C unnamed (1).
12224 74C12 Pleurotomaria trilix, Hall (2).

Station No. 75, Newport narrows, in *Hamilton sandstone VIII c.*

12225 75–( ) unnamed (1).
12226 75–2 Chonetes lepidus, Hall (1).

Station No. 76, near Station 75, in *Hamilton fossil ore, VIII c.*

12227 76*a*3 Spirifera mucronata, Con. (3).
12228 76*a*4 Spirifera acuminata, Con.
12229 76*a*5 Spirifera medialis, Hall.
12230 76*a*6 undetermined.
12231 76*a*7 undetermined.
12232 76*a*8 Chonetes setigerus, Hall.
12233 76B1 undetermined.
12234 76-( ) undetermined.

Station No. 77, near Station 76, from (a) *Portage (Cardiola shale)* VIII f, (b)(c)(d) *Hamilton upper shales, VIII c.*

12235 77–1 Ambocœlia umbonata, Hall (4).
12236 77*a*2 Strophodonta perplana, Con. (2).
12237 77–18 Nucula lirata, Con. (1).
12238 77–20 Tropidoleptus carinatus, Hall (3).
12239 77C3 unknown (1).
12240 77C21 Nucula lirata, Con. (1).
12241 77*d* undetermined (1).
12242 77*d*4 Tropidoleptus carinatus, Hall (7).
12243 77*d*6 Pleurotomaria capillaria, Hall (2).
12244 77*d*8 Spirorbus angulatus, Hall (1).
12245 77*d*9 Eodon bellistriatus, Con. (1).
12246 77*d*12 Rhychonella horsfordi, Hall (1).
12247 77*d*13 Nucula yandalli, Hall (1).
12248 77*d*14 Dalmanites boothii, Green (1).
12249 77*d*15 unknown.
12250 77*d*16 Crania hamiltonensis, Hall (1).

Station No. 78, Northern Central Railroad cut, one mile south of SELINSGROVE, SNYDER Co., Pa., in (a) *Marcellus VIII b;* (b) *Hamilton shale, VIII c;* (c) *Hamilton sandstone, VIII c.*

12251 78–4 Chonetes coronatus, Con. (1).
12252 78B unnamed (2).
12253 78B2 (A) Styliola fissurella, Hall (1).
12254 78B6 (C) Tropidoleptus carinatus, Hall (1).
12255 78B8 Aulopora tubæformis, Goldf. (3).
12256 78B12 Palæoneilo constricta, Con. (1).
12257 78C unnamed.
12258 78C5 Rhynchonella congregata, Con. (1).
12259 78C6 Tropidoleptus carinatus (1).

Station No. 79, Northern Central railroad cuts, one mile north of SELINSGROVE, SNYDER Co., PA., in (a) *Lower Helderberg limestone, VI;* (b) *Oriskany sandstone, VII;* (c) *Oriskany*, two miles north of (b); (d) *Lower Helderberg limestone, VI.*

12260 79B1 Spirifera arrecta, Hall (1).

Station No. 80. Delaware, Lackawanna and Western railroad cuts, east of Asylum, at BLOOMSBURG, COLUMBIA Co., PA., n (a) *Catskill, IX.*

12261 80–1 Productella hirsuta, Hall (33 spec).
12262 80–2 Spirifera mesocostalis, Hall (1 with 80–1; 34 alone; 1 with 80–6; 1 with 80–13; 37 in all).
12263 80–6 Productella hirsuta, var. rectispina, Hall (2).
12264 80–7 Leiorhynchus mesocostale, Hall (5; also two boxes full of various specimens marked the same).
12265 80–12 undetermined (1).
12266 80–14 undetermined (1).
12267 80–16 same as 80–7.
12268 80–17 Nucula varicosa, Hall (2).
12269 80–18 Palæoneilo brevis, Hall (3).
12270 80–19 Rhynchonella contracta, Hall (3).
12271 80–20 Orthis impressa, Hall (1).
12272 80–23 unnamed.
12273 80–24 unnamed.
12274 80*a*3 Spirifera disjuncta, Sby. (2).
12275 80*a*5 unnamed.
12276 80–( ) unnamed.

Station No. 81, Baileysburg, in *Hamilton sandstone, VIII c.*

12277 81–2 Spirifera medialis, Hall (2 and a tray full of sundries).

Station No. 82, Pine Grove, Miller township, Perry Co., in *Marcellus limestone, VIII a, b.*

12278 82–1 unnamed (3).
12279 82–2 Strophodonta perplana, Con. (1).
12280 82*a*1 Leiorhynchus multicostatum, Hall (2).
12281 82*a*3 undetermined (2).
12282 82*a*4 Strophodonta demissa, Con. (3).

Station No. 83, old Juniata furnace, Centre township. *Marcellus Shale, VIII b.*

12283 83–1 Tentaculites —— ? (2).

Station No. 84, I. C. White's collection from opposite BLOOMSBURG, COLUMBIA Co., PA., *Chemung, VIII g.*

12284 84–2 unnamed (4).
12285 84–1 unnamed (1).
12286 84–2 unnamed (1).
12287 84–4 Chonetes lepidus, Hall (1).
12288 84–6 Schizodus quadrangularis, Hall (1).
12289 84–7 Palæoneilo plana, Hall (1).
12290 84–8 undetermined (1).
12291 84–11 undetermined (3).
12292 84–15 Rhynchonella emma (or near it), Hall, (1).

Station No. 85, I. C. White, near BLOOMSBURG, COLUMBIA Co., PA., *Hamilton strata, VIII c.*

12293 85–4 Orthoceras subulatum, Hall (1).
12294 85–6 unnamed (2).

Station No. 86, I. C. White, near BLOOMSBURG, COLUMBIA Co., PA., *Clinton strata. V a.*

12295 86–9 Chonetes ——? (1).

Station No. 87, I. C. White, Vanderslice's quarry, near BLOOMSBURG, COL. Co., PA., *Hamilton strata, VIII c.*

12296 87–1 Discina media, Hall (2).
12297 87–2 unnamed (1).
12298 87–4 Athyris spiriferoides, Eaton (1).

Station No. 88, same as 87.

Station No. 89, MAHANOY TOWN, NORTHUMBERLAND Co., PA., *Lower Helderberg strata, VI.*

12299 89–1 Spirifera macropleura, Hall (3).
89–2 Strophomena depressa, Sby. (1).

Station No. 90, Paxinos quarry, NORTHUMBERLAND Co., PA.. *Hamilton strata, VIII c.*

12300 90–1 Tropidoleptus carinatus, Hall (3).

Station No. 91, SELINSGROVE JUNCTION, NORTH. CO., PA.

12301 91–1 Leptocælia acutiplicata, Hall (1).
12302 91–4 unnamed (1).
12303 91–6 unnamed (1).

Station No. 92, I. C. White, Vanderslice's quarry, near BLOOMSBURG, PA.

12304 92–( ) unnamed (1).
12305 92–( ) unnamed (1).
12306 92–4 Spirifera granulifera, Hall (1).
12307 92–9 Eodon bellistriata, Hall (1).
12308 92–11 Spirifera fimbriata, Hall (1).
12309 92–13 unnamed (1).
12310 92–14 Nucula bellistriata, Hall (1).
12311 92–15 Strophodonta perplana, Con. (1).
12312 92–25 Coleolus tenuiscinctus, Hall (1).
12313 92–30 unnamed (1).
12314 92–32 Atrypa reticularis, Hall (1).

Station No. 93, from I. C. White, Rupert Narrows, near BLOOMSBURG, PA. *Catskill, IX.*

12315 93–1 Crinoid (1).
12316 93–2 Crinoid (1).
12317 93–3 Crinoid (1).
12318 93–4 Fishbone (1).
12319 93–5 unnamed (1).
12320 93–6 unnamed (1).
12321 93–7 unnamed (1).
12322 93–8 Grammysia elliptica? Hall (1).
12323 93–9 unnamed (1).
12324 93–10 Pleurotomaria (box).
12325 93–11 Pteronites chemungensis, Hall (5).
12326 93–12 Holoptychius —— (1).
12327 93–13 Pleurotomaria? (1).
12328 93–14 Holoptychius (1).
12329 93–11 Holoptychius tooth (1).
12330 93–17 Lingula spatulata, Hall (2).
12331 93–19 ? (1).

12332 93–20 Spirifera disjuncta, Sby. (1) in *Catskill.*
12333 93–21 unnamed (7)
12334 93–22 unnamed (3).
12335 93–23 unnamed (1).
12336 93–24 unnamed (1).

Station No. 94, Crawley hill, four miles southwest of New Bloomfield, Perry Co., from *Hamilton fossil ore, VIII c.*

12337 94–1 Spirifera mucronata, Con. (10).
12338 94–1 unnamed (1).
12339 94–2 Tropidoleptus carinatus, Hall (12).
12340 94–3 Rhynchonella congregata, Con. (5).
12341 94–6 undetermined (1).
12342 94–7 Tentaculites attenuatus, Hall (4), and with 13 and 25.
12343 94–9 Actinodesma subrectum, Hall (1).
12344 94–10 undetermined (1).
12345 94–11 Ancyrocrinus bulbosus, Hall (2).
12346 94–12 Atrypa aspera, Schlot. (1).
12347 94–13 Spirifera medialis, Hall (9), and also with 3 and 12.
12348 94–14 Homalonotus dekayi, Green (1).
12349 94–16 undetermined (4).
12350 94–17 Eodon bellistriatus, Con. (1).
12351 94–19 unnamed (2).
12352 94–20 Spirifera acuminata, Con. (5).
12353 94–25 Chonetes coronatus, Con. (14), and also with 2 and 7.
12354 94–( ) Orthoceras, large specimen (1).
12355 94–( ) Productus (1).
12356 94–( ) loose specimens (12).

Station No. 95, from Grove Bros. lime quarry, 3½ m. from Rupert, near BLOOMSBURG, COL. Co., PA. in *Oriskany sandstone strata, VII.*

12357 95–( ) unnamed (5).
12358 95–1 Spirifera arrecta, Hall (8).
12359 95–2 Platyceras magnificum, Hall (1).
12360 95–3 Platyceras ventricosum, Hall (4).

12361 95–5 Merista lata, Hall (4).
12362 95–6 unnamed (1).
12363 95–8 Leptocælia flabellites, Hall (1).
12364 95–12 Rensselæria ovalis, Hall (1).

Station No. 96, two miles west from RUPERT, COLUMBIA Co., PA., in *Lower Helderberg shaly limestone* (at base of *VI*, overlying Salina strata).

Station No. 97, I. C. White's specimens from Stony Brook, near BLOOMSBURG, COL. Co., PA., in ——— ——— *strata*, *VIII* ———.

12365 97–( ) unnamed (1).
12366 97–1 Orthis impressa, Hall (1), and with 17.
12367 97–2 Leiorhynchus mesocostale, Hall (1).
12368 97–4 Productella hirsuta, Hall (4).
12369 97–6 Rhynchonella contracta, Hall (2).
12370 97–8 Chonetes lepidus, Hall (1).
12371 97–9 Coleolus acicula, Hall (1).
12372 97–11 Strophodonta perplana, Hall (2).
12373 97–12 Palæoneilo brevis, Hall (2).
12374 97–15 Nuculites oblongatus, Con. (1).
12375 97–16 Nucula bellistriata, Con. (3).
12376 97–17 Atrypa reticularis, Hall (1), and with 1.
12377 97–18 Rhynchonella contracta, Hall (1).
12378 98–19 Productella hirsuta, Hall (1) and with 16.

Station No. 98, I. C. White's specimens from 4 miles west of SHICKSHINNY, LUZERNE Co., PA., in *Catskill rocks*, *IX*.

12379 98–1 Holoptychius americanus, Leidy (1).

Station No. 99, near Drumgold's tannery, Sherman's Creek, Carroll township, Perry Co., from *Hamilton upper slates*, *VIII c*.

12380 99–1 Eodon bellistriatus, Con. (2).
12381 99–2 Modiomorpha concentrica, Hall (1).
12382 99–3 Spirifera fimbriata (3), and with 15.

12383 99–4 Orthoceras nuntium, Hall (1) with 11.
12384 99–6 Prœtus macrocephalus (6), and with 99–30, 55.
12385 99–7 Streptelesma rectum, Hall (2).
12386 99–8 Rhynchonella prolifica, Hall (4).
12387 99–10 Ambocœlia umbonata, Hall (4).
12388 99–11 Strophodonta inæquistriata, Con. (8).
12389 99–12 Pleurotomaria trilix, Hall (1).
12390 99–13 Dalmanites boothii, Green (4).
12391 99–14 Cryptonella planirostra, Hall (1).
12392 99–15 with 3, unnamed (1).
12393 99–16 Cypricardinia indenta, Con. (7).
12394 99–23 Spirifera ziczac, Hall (1).
12395 99–24 Strophodonta perplana, Con. (1).
12396 99–26 Beyrichia punctulifera, Hall (1).
12397 99–27 Palæoneilo maxima, Con. (1).
12398 99–28 unnamed (1).
12399 99–29 Chonetes lepidus, Hall (1).
12400 99–30 unnamed (1).
12401 99–31 Palæoneilo emarginata, Con. (3).
12402 99–32 unnamed (2).
12403 99–34 unnamed (1).
12404 99–36 Strophodonta textilis, Hall (1).
12405 99–37 Cyrtina hamiltonensis, Hall (1).
12406 99–38 unnamed (1) with 54.
12407 99–41 Prœtus haldemani, Hall (1).
12408 99–43 unnamed (1).
12409 99–45 Platyceras attenuatum, Hall (1).
12410 99–46 unnamed (5).
12411 99–47 Actinocrinus eucharis, Hall (1).
12412 99–49 unnamed (1).
12413 99–50 unnamed (1).
12414 99–51 Modiomorpha concentrica, Hall (2).
12415 99–54 Phacops rana, Greene (3) with 38.
12416 99–55 Stictopora? (with 99–30).
12417 90–() unnamed (4).

Station No. 100, I. C. White's collections, two miles north of Georgetown, near BLOOMSBURG, COL. CO., PA., 1000 feet above the base of the *Chemung formation*, *VIIIg*.

12418 100–6 unnamed (1).
12419 100–12 Palæoneilo plana, Hall (1).
12420 S–100 unnamed (4).

Station No. 101, Mr. Ferguson's farm near Station No. 6, Clark's mill, Perry Co., Pa., from the *Hamilton sandstone, VIII c.*

12421 101–2 Tropidoleptus carinatus, Hall (10) and with 101–2.
12422 101–2 Spirifera mucronata, Con. (1).
12423 101–3 Spirifera medialis, Hall (1).
12424 101–5 unnamed (2).
12425 101–( ) unnamed (4).

Station No. 102 wanting.

Station No. 103, half-a-mile north of King's mill, Penn township, Perry Co., from the top strata of the *Chemung formation, VIII g.* Note.—Most of the following are doubtful; matrix rough; shells small and imperfect; mostly lamellibranchs.

12426 103–1 Leda rostellata, Nby. (1) with 2, 4, 6, 8, 9.
12427 103–2 unnamed (1) and with 103–7.
12428 103–4 unnamed (1).
12429 103–5 Palæoneilo—a very small spec. (1).
12430 103–6 Bellerophon maera? (1).
12431 103–7 unnamed (1) with 103–2.
12432 103–8 unnamed (1) with 103–8.
12433 103–9 unnamed (1) with 103–1, 8.
12434 103–10 Palæoneilo barrisi, W. & W. (2).
12435 103–11 Spirifera mesocostalis? Hall (2).
12436 103–12 Fish tooth (1).
12437 103–13 Modiomorpha? (2).
12438 103–15 Modiomorpha subalata? Con. (1).
12439 103–20 Sanguinolites chemungensis, Con. (1).
12440 103–21 unnamed (4).
12441 103–23 unnamed (1).
12442 103–27 Spirifera disjuncta, Sby. (1).
12443 103–( ) cast of Bellerophon, &c., (1).

Station No. 104, opposite Shermandale mill, Perry Co., Pa., from the *Kingsmill sandstone*, in *Chemung-Catskill formation*, *VIII–IX.*

12445 104–4 unnamed, and with 5, 6, 8, 11, 12 (5).
12446 104–5 Spirifera disjuncta, Sby. (7).
12447 104–6 Modiomorpha subalata, Con. (2).
12448 104–7 Schizodus oblatus and large variety (6).
12449 104–8 unknown (1).
12450 104–11 unknown (1).
12451 104–12 unknown (1).
12452 104–13 Schizodus rhombeus, Hall (2).
12353 104–15 Pleurotomaria ? fragment (1).
12454 104–27 unnamed.
12455 104–28 Modiomorpha quadrata ? Hall (1).
12456 104–38 Sanguinolites undatus (2).
12457 104–39 Goniophora chemungensis, Van. (2).

Station No. 105. Hentzel's narrows, near Clark's mill, 2½ m. N. W. of New Bloomfield, Perry Co., from *Hamilton (a) lower and (b) upper sandstone*, *VIII c.*

12458 105–4 Loxonema delphicola, Hall (3).
12459 105–10 Phacops rana, Green (1).

Station No. 106, Crawley hill, McQuigley's, Centre Co., *Hamilton sandstone*, *VIII c.*

12460 106–1 Orthis penelope, Hall (7).
12461 106–2 Spirifera mucronata (1).
12462 106–4 Spirifera medialis, Hall (4, one a cast.).
12463 106–5 unnamed.
12464 106–6 Tropidoleptus carinatus, Hall (1).
12465 106–7 no record (1).

Station No. 107, Mr. Rambo's, 3½ miles south of New Bloomfield, Perry Co., from the *Hamilton sandstone formation*, *VIII c.*

12466 107–1 Chonetes cornutus ? (3).
12467 107–2 Spirifera medialis, Hall (3).
12468 107–5 Pteronites ? (1).

Station No. 108, named specimens from H. S. Williams, of Ithaca, N. Y., *Chemung, VIII g.*

12469 108–5 Spirifera mesocostalis (1).
12470 108–7 Rhynchonella pugnus (contracta ?) (1).
12471 108–14 Spirifera mesostrialis (2).
12472 108–23 Atrypa reticularis, Linn. (1).
12473 108–31 Stictopora meekii (1).

Station No. 109, one mile north of Delville, Perry Co., from top strata of *Chemung formation, VIII g.*

109–( ) Cyrtina hamiltonensis, Hall, variety (1).
12474 109–1 unnamed (2).
12475 109–2 Strophodonta demissa, Con. (1).
12476 109–3 Productella hirsuta, Hall (2).
12477 109–4 Rhynchonella contracta, Hall (1).
12478 109–5 Aulopora ——— ? (2).
12479 109–6 unnamed (2).
12480 109–7 Conularia continens, Hall (1).
12481 109–8 Crinoid (3).
12482 109–9 Lichenalia ?
12483 109–( ) unnamed.
12484 a large specimen, cast of Lepidodendron, from Cove mountain, *Pocono sandstone*, formation X.

Station No. 110, Brickfield, one mile southwest of New Bloomfield, Perry Co., from *Hamilton upper shale, VIII c.*

12485 110–( ) unnamed (1).
12486 110–1 Phacops rana, Green (4).
12487 110–2 Chonetes logani, var. aurora, Hall (5).
12488 110–3 Rhynchonella horsfordi, Hall (3).
12489 110–4 Spirifera ziczac, Hall (4).

12490 110–5 unnamed (3), and with 110–4.
12491 110–6 Leiorhynchus multicostatum, Hall (20).
12492 110–8 unnamed (1).
12493 110–9 unnamed (7).
12494 110–10 Streptelasma rectum, Hall (1).
12495 110–11 unnamed (6), and with 14, 24 and 26.
12496 110–12 unnamed (1).
12497 110–13 Tropidoleptus carinatus (1).
12498 110–14 Atrypa aspera, Schlot. (1).
12499 110–15 Vitulina pustulosa, Hall (1).
12500 110–17 Ambocœlia umbonata, Hall (12).
12501 110–18 Chonetes coronatus, Con. (1).
12502 110–19 Spirifera fimbriata, Hall (3).
12503 110–20 Crania hamiltoniæ, Hall (1).
12504 110–21 unnamed (1), with 23.
12505 110–22 Chonetes mucronatus, Hall (1).
12506 110–25 Dalmanites boothii, green (2).
12507 110–26 Streptorhynchus chemungensis, Var. arctostriatus, Hall (1) with 110–11.
12508 110–27 Modiomorpha concentrica, Con. (1).
12509 110–29 Strophodonta perplana, Hall (1).

Station No. 111, Kings Mill, Penn township, Perry Co., part of St. No. 36 collection from the *Kingsmill sandstone.* From the *Catskill formation, IX.*

12510 111–1 Spirifera disjuncta, Sby. (10 specimems).
12511 111–10 unnamed (1).
12512 111–13 unnamed (3).
12513 111–14 unnamed (4).
12514 111–17 unnamed (1).
12515 S–111 unnamed (18).
12516 S–111–1 unnamed (1).
12517 S–111–14 Beyrichia sulcopunctata, sp. nov. Ms.
12518 111–( ) unnamed (9) Note.—Most of the material in a bad state, fragments of Entomostraca, chiefly; some specimens in the hands of Prof. T. Rupert Jones for study.

Station No. 112, wanting.

Station No. 113, Foose's tunnel, South Cove mountain, in *Pocono sandstone strata, X.*

12519 113–2 Lepidodendron corrugatum, Dawson (1).
12520 S113–1 Sphenopteris flaccida, Crepin, (two boxes full, named by Lesquereux).
12521 S–113–3 Calamites? (a box full).

Station No. 114, Linton's, near King's mill, 200 yards north of station No. 50, from *Catskill-Chemung strata, VIII–IX.*

12522 114–() unnamed (1).
12523 114–1 unnamed (3).
12524 114–3 Holoptychius americanus, Leidy (2).
12525 114–4 Woody matter.
12526 114–5 Bothriolepis taylori? Hall (1).

Station No. 115, New Bark tavern, one mile south of New Bloomfield, Perry Co., Pa., from *Chemung lower strata, VIII (f?) g.*

12527 115–1 Atrypa reticularis, Linn, (2).
12528 115–2 Modiomorpha concentrica, Con. (1).
12529 115–3 Productella hirsuta? Hall (1).
12530 115–5 Pterinea (2).

Station No. 116, S. Brown's, two miles south-west of New Bloomfield, from top of *Hamilton sandstone* and bottom of *Hamilton shale, VIII c.*

12531 116–10 unnamed (1).
12532 116–11 unnamed (1).

Station No. 117, Falling Spring, Spring township, Perry Co., from *Marcellus limestone VIII a, b.*

12533 117–1 Ambocœlia umbonata, Hall (1).
12534 117–4 Bellerophon ——? (1).

Station No. 118, Dorrans narrows, north end, Mr. Toomey's, Centre township, Perry Co., from *Hamilton upper shale. VIII c.*

12535 118–1 Spirifera mucronata, Hall (1).
12536 118–3 Atrypa reticularis, Linn. (1).
12537 118–7 Ancyrocrinus bulbosus, Hall (1).
12538 118–8 Spirifera medialis, Hall (1).
12539 118–10 Dalmanites boothii, Green (2).
12540 118–12 Platyceras attenuatum, Hall (1).
12541 118–13 Strophodonta perplana, Con. (1).
12542 118–14 Favosites arbuscula, Hall (3).
12543 118–16 Spirifera medialis, Hall (1).
12544 118–18 Palæoneilo constricta, Con. (2).
12545 118–21 Heliophyllum halli, E. & H. (2).
12546 118–22 Palæoneilo emarginatum, Con. (1).
12547 118–23 unnamed (1).
12548 118–25 Productella spinulicosta, Hall (2).
12549 118–27 Orthoceras subulatum, Hall (1).
12550 118–29 Pleurotomaria capillaris, Con. (1).
12551 118–31 Crinoid plate—(1).

Stations Nos. 119 to 128, wanting.

Station No. 129, Roadside, one to two miles south of mouth of Lock's run, Wheatfield township, Perry Co., in *Chemung rocks. VIIIg.*

12552 129–3 Atrypa reticularis, Linn (3).
12553 129–6 Productella hirsuta, Hall (1).

Station No. 130, wanting.

Station No. 131, Hartzleins, near Station No. 129, from *Chemung strata VIII g.*

12554 131–1 Bellerophon mæra, Hall (a box full).

Station No. 132, just south of No. 131, in the same.

12555 132–1 Leiorhynchus mesocostale, Hall (2).

Station No. 133, near A. Patton's, one mile south of Lock run, near Station No. 132, in *Catskill, IX.*

12556 133–1 Schizodus rhombeus, Hall (2).

Station No. 134, near Wm. Wood's, S. W. of last Station, in *Catskill, IX.*

12557 134–3 Palæoneilo brevis, Hall (1).

Stations Nos. 135 to 139, wanting.

Station No. 140, Ayl's lime-kiln, 1½ m. S. E. of New Bloomfield, in *Lower Helderberg upper shaly beds, VI.*

12558 140–1 Chætetes abruptus (1).

Station No. 141, one mile east of Pine Grove, Miller township, Perry Co., Pa., from *Chemung strata, VIII g.*

12559 141–1 Orthis impressa, Hall (17 specimens).
12560 141–2 Productella hirsuta, Hall (1).
12561 141–3 Spirifera mesocostalis, Hall (2).
12562 141–4 Tentaculites speculus, Hall (2).
12563 141–6 Strophodonta perplana, var. parvula (1).

Station No. 142, one mile west of Montebello narrows, Miller township, *Hamilton upper shale, VIII c.*

12564 142–8 Orthonota parvula (1).
12565 142–9 Tentaculites ——? (1).
12566 142–12 unnamed (1).

Station No. 143, just north of last. *Same rocks.*

12567 143–1 Atrypa reticularis, Linn. (2).

Station No. 144, east of Montebello narrows, Miller township, *Chemung, VIII g.*

12568 144–1 Strophodonta perplana, var. parvula (1).
12569 144–2 Cyrtina hamiltonensis, Hall (2).
12570 144–3 Palæneilo constricta, Con. (1).
12571 144–5 Atrypa reticularis, Linn (5).
12572 144–6 Productella hirsuta, Hall (1).
12573 144–7 Spirifera mesocostalis, Hall (1).
12574 144–8 and 1, unnamed (1).
12575 144–9 Eodon bellistriatum, Con. (1).
12576 144–10 Pleurotomaria —— ? (2).

Station No. 145, wanting.

Station No. 146, Newport and Baileysburg upper road (near the fork), Perry Co., *Portage* and *Chemung strata, VIII f. g.*

12577 146–( ) unnamed (13).
12578 146–1 Aulopora tubæformis, Goldf. (7).
12579 146–2 Lunulucardium fragile, Hall (7).
12580 146–3 Ambocœlia umbonata, Hall (1).
12581 146–4 Strophodonta perplana, var. parva (7).
12582 146–5 Cardiola speciosa, Hall (1).

Stations Nos. 147 to 150, wanting.

Station No. 151, one mile northeast of Bridgeport, Perry Co., Pa., from *Marcellus formation, VIII a.*

12583 151–1 Phacops rana, Green (2).
12584 151–3 Prœtus ? (1).
12585 151–4 Fenestella —— ? (1).
12586 151–5 Ambocœlia —— ? (1).
12587 151–6 unnamed (1).
12588 151–( ) unnamed (2).

Station No. 152, east of Rattlesnake hill, on the road from New Bloomfield to Duncannon, Wheatfield; *Hamilton upper shale, VIII c.*

12589 152–3 unnamed (3).

Stations Nos. 153 to 156, wanting.

Stations No. 157, half a mile N. of STROUDSBURG, MONROE CO., PA., I. C. White's collections from the *Marcellus formation*, *VIII b.*

12590 157–1
12591 157–2
12592 157–3
12593 157–4
12594 157–5
12595 157–6
12596 157–7
12597 157–8
12598 157–9
12599 157–10
12600 157–11
12601 157–12
12602 157–13
12603 157–14
12604 157–15
12605 157–16
12606 157–17
12607 157–18
12608 157–19
12609 157–20
12610 157–21
12611 157–22
12612 157–23
12613 157–24
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12650 157–61
12651 157–62
12652 157–63
12653 157–64
12654 157–65
12655 157–66
12656 157–67
12657 157–68
12658 157–69
12659 157–70
12660 157–71
12661 157–72
12662 157–73
12663 157–74

12664 157–75
12665 157–76
12666 157–77
12667 157–78
12668 157–79
12669 157–80

Stations Nos. 158, 159 wanting.

Station No. 160, at the dam half-a-mile north of STROUDSBURG, MONROE Co., PA., from the *Corniferous limestone, VIII a.*

12670 160–1 Tentaculites scalariformis, Hall (4).
12671 160–2 unnamed (1).

Station No. 161, Millerstown ore-works, east side of the Juniata, Perry Co., from *Clinton strata, Va.*

12672 161–1 Beyrichia?
12673 161–2 Homalonotus delphinocephalus, Hall (3).
12674 161–3 unnamed (1).
12675 161–4 an eye of Phacops, or of Dalmanites (2).
12676 161–5 Atrypa reticularis, Linn. (2).
12677 161–6 Beyrichia lata, Van. (3).
12678 161–7 Strophodonta striata, Hall (1) with 6 and (3) unnamed.
12679 161–8 Avicula rhomboidea, Hall (1).
12680 161–10 Strophomena rugosa, Dal. (1).
12681 161–12 Rhynchonella plicatella, Hall (2).
12682 161–13 with 161–2, unnamed (1).
12683 161–16 Avicula emacerata, Con. (2).
12684 161–18 Modiomorpha? (1).
12685 161–19 unnamed (1).

Station No. 162, wanting.

Station No. 163, Duncan's Island, four miles N. of Junction farm, in *Hamilton upper slates, VIII c.*

12686 163–1 Tropidoleptus carinatus, Con. (5).

Station No. 164, Wynn's quarry, Sherman's creek, Tyrone township, Perry Co., from *Salina strata, Vc.*

12687 164–() unnamed (2).
12688 164–1 Beyrichia notata, Hall (5).

Station No. 165, one mile N. of Z. Rice's, Spring township, Perry Co., from *Hamilton upper shale, VIIIc.*

12689 165–1 Stromatopora corallifera? (2).

Station No. 166, two miles E. of Little Germany, Centre township, from *Hamilton upper shale, VIIIc.*

12690 166–1 Spirifera mucronata, Con. (1).
12691 166–2 Tentaculites attenuatus, Hall (1).
12692 166–3 Goniatites? (1).

Station No. 167, trap dyke opposite Sherman's creek mouth on the Dauphin Co. bank of the Susquehanna river.

12693 167–2 Shale baked by contact (2).

Station No. 168, Millerstown ore works, E. side Juniata river from *Clinton strata, Va.*

12694 168–9 unnamed (1).

Station No. 169, one mile north of Junction farm, Duncan's, Island, Perry Co., from the *King's mill sandstone, VIII–IX.*

12695 169–1 Rhynchonella ——— ? (1).
12696 169–2 Spirifera disjuncta, Sby. (1).
12697 169–3 Tentaculites spiculus, Hall (2).
12698 169–4 Schizodus cuneus, Hall (1).
12699 169–6 unnamed (1).

Station No. 170, wanting.

Station No. 171, one mile west of Marysville, Rye township, Perry Co., from *Hamilton sandstone and upper shale, VIIIc.*

12700 171–1 Spirifera granulifera, Hall (4).
12701 171–2 Atrypa reticularis, Linn. (1).

12702 171–3 Pleurotomaria ———— ? (1).
12703 171–15 Aviculopecten princeps, Con. (1).
12704 171–*a* unnamed (4).

Station No. 172, two miles S. W. of N. Germantown, from the *Clinton lower shales, V a.*
12705 172–1 unnamed (1).

Station Nos. 173 to 182, wanting.

Station No. 183, near Landisburgh wagon shop, from the *Salina formation, V c.*
12706 183–1 Leperditia alta, Con. (1).

Station No. 184, wanting.

Station No. 185, gap in Little mountain two miles from Sterritt's gap in North mountain, Perry Co., from *Hamilton sandstone, VIII c.*
12707 185–1 Tropidoleptus carinatus, Con. (1).
12708 185–2 Spirifera formosa ? (1).

Stations Nos. 185, 186, wanting.

Station No. 187, three miles E. of Ickesburg, from *Lower Helderberg strata, VI.*
12709 187–1 Spirifera macropleura, Hall (2).
12710 187–2 Strophomena rugosa, Dal. (1).
12711 187–3 Dalmanites pleuroptyx, Green (ornasutus, Con.)
12712 187–4 Orthis eminens, Hall (3).
12713 187–5 Eatonia medialis, Van. (1).
12714 187–6 Phacops logani, Hall (1).
12715 187–7 Meristella bella, Hall (2).

Station No. 188, I. C. White's specimens from *McConnellstown, Huntingdon Co., Pa.*, from the *Marcellus, VIII b.*
12716 188–1 Leiorhynchus limitare, Van. (2).
12717 188–2 Ambocœlia umbonata, Con. (2).

Station No. 189, I. C. White's specimens from Pa. R. R. 203 rd. milepost, below HUNTINGDON, ——— *strata, VIII.*

12718 189–1 unnamed (6).
12719 189–2 unnamed (5).
12720 189–3 unnamed (1).
12721 189–5 unnamed (1).

Station No. 190, I. C. White's collections at COFFEE RUN R. R. STATION, HUNTINGDON Co., PA., from *Lower Hamilton strata, VIII c.*

12722 190–1 Ambocœlia umbonata, Con. (6).
12723 190–2 Leiorhynchus limitare (1).
12724 190–4 and 1, unnamed (1).
12725 190–5 Rhynchonella horsfordi, Hall (1).
12726 190–6 Pteronites lævis, Hall (1).

Station No. 191, I. C. White's collections at MCCONNELLSTOWN, HUNTINGDON Co., PA., from *Marcellus? strata, VIII b.*

12727 191–1 Ambocœlia umbonata, Con. (2).
12728 191–2 Leiorhynchus limitare, Van. (1).
12729 191–3 Pteronites lævis, Hall (1).

Station No. 192, I. C. White's collections from west of GRAFTON, HUNTINGDON Co., PA., from *Marcellus strata, VIII b.*

12730 192–1 Styliola fissurella, Hall
12731 192–2 Tentaculites —— ? } (5).

Station No. 193, I. C. White's collections from road S. W. of MCCONNELLSTOWN, HUNTINGDON Co., PP., from *Genesee strata, VIII e.*

12732 193–1 Goniatites complanatus (3).
12733 193–2 Cardiola speciosa, Hall (1).
12734 193–3 Styliola fissurella, Hall (1).
12735 193–4 Lunulicardium fragile, Hall (1).
12736 193–5 Orthoceras subulatum, Hall (1).
12737 193–6 Cardiola doris (3).

Station No. 194, wanting.

Station No. 195, I. C. White's collections at J. J. Johnston's, on James Creek, HUNTINGDON Co., PA., from *Genesee strata, VIII e.*

12738 195–1 Tropidoleptus carinatus, Con. (3).

Station No. 196, I. C. White's collections near Rough and Ready in HUNTINGDON Co., PA., from *Hamilton sandstone and upper shale, VIII c.*

12739 196–2 Pleurotomaria sulcomarginata, Con. (8).
12740 196–3 Palæoneilo emarginata, Con. (1).
12741 196–4 Pleurotomaria ————? (3).
12742 196–5 Actinodesma subrectum, Whitfield (3).
12743 196–6 Loxonema terebra, Hall (2).
12744 196–7 Loxonema delphicola, Hall (2).
12745 196–9 Spirifera medialis, Hall (1).
12746 196–10 Rhynchonella prolifera, Hall (3).
12747 196–12 Lingula ligea? Hall (1).
12748 196–14 Leiopteris (4)?
12749 196–15 unnamed (5).
12750 196–16 unnamed (3).
12751 196–17 Pleurotomaria capillaria, Con. (1).
12752 196–19 Chonetes logani, Var. aurora, Hall (1).
12753 196–20 Bellerophon leda, Hall (1).
12754 196–21 Pteronites ——? (1).
12755 196–23 Leiopteria rafinesquii, Hall (1).
12756 196–24 Spirifera mucronata, Con. (1).
12757 196–25 Tropidoleptus carinatus, Con. (1).
12758 196–26 Cardiomorpha bellatula? Hall (1).

Station No. 197, I. C. White's collections at Mapleton, near Juniata river bridge, HUNTINGDON Co., PA., from *Oriskany strata, VII.*

12759 197–1 Modiomorpha concentrica, Con. (1).
12760 197–3 Tropidoleptus carinatus, Con. (1).
12761 197–4 Lunulicardium fragile, Hall (1).
12762 197–6 Spirifera mucronata, Con. (3).
12763 197–7 Ambocælia umbonata, Con. (2).
12764 197–9 Chœtetes? (2).

12765 197–11 Eodon bellistriatum, Con. (3).
12766 197–12 Palæoneilo constricta, Con. (2).
12767 197–13 Actinopteria decussata, Hall (2).
12768 197–15 Palæoneilo tenuistriata, Hall (1)

Stations Nos. 198, 199, wanting.

Station No. 200, Mapleton, HUNTINGDON Co., PA., from the *Oriskany, VII.*

12769 200–1 Rensselæria ovoides, Eaton (26 specs.).
12770 200–2 Spirifera arrecta, Hall (2).
12771 200–4 Platystoma ventricosum, Con. (2).
12772 200–5 Megambonia lamellata, Hall (3).
12773 200–6 Platyceras platystoma, Hall (2).
12774 200–7 Platyceras conicum, var. inornatum, Hall (2).
12775 200–8 Eatonia peculiaris? (1).
12776 200–9 Platyceras conicum, var. inflectum (4).
12777 200–10 Platyceras plicatum, var. planum (2).

Station No. 201, I. C. White's collections at HUNTINGDON, from *Hamilton upper shale, VIII c.*

12778 201–2 Athyris spiriferoides, Eaton (1).
12779 201–5 Homalonotus dekayi, Green (2).
12780 201–6 Leiopteria bigsbyi, Hall (3).
12781 201–8 Nuculites oblongatus, Con. (1).
12782 201–12 Tropodoleptus carinatus, Con. (1).
12783 201–13 Cardiomorpha bellatula, Hall (1).
12784 201–19 Leiopteria rafinesquii, Hall (3).
12785 201–20 Orthoceras (1).
12786 201–21 Phacops rana, Green (2).
12787 201–22 Spirifera fimbriata, Con. (1).
12788 201–24 Crinoid plate (1).
12789 201–25 Cypricardinia indenta, Con. (1).

Station No. 202, I. C. White's collections at MAPLETON, HUNTINGDON Co., PA., from *Genesee and Portage formations, VIII e. f.*

12790 202–1 Lunulicardium fragile, Hall (5).
12791 202–2 Cardiola doris (2).
12792 202–3 Goniatites patersoni, Hall (4).
12793 202–4 Orthoceras aciculum, Hall (2).

Station No. 203, I. C. White's collections at ½ a mile above Huntingdon RR. station, from *Marcellus shale, VIIIb.*

12794 203–2 Pteronites lævis, Hall (1).
12795 203–3 Ambocœlia umbonata, Con. (2).
12796 203–2,3 unnamed (1).

Stations Nos. 204 to 210 wanting.

Station No. 211, I. C. White's collections at Haun's bridge, Juniata township, HUNTINGDON Co., from bed 175 feet below *Chemung upper (Lackawaxen) conglomerate, VIIIg.*

12797 211–( ) unnamed (3).

Station No. 212 wanting.

Station No. 213, see 211 above, from bed 200 feet below *Chem. upper cong., VIIIg.*

12798 213–3 Atrypa reticularis, var. aspera, Schlot. (1).

Station No. 214, I. C. White's collections at Grafton, HUNTINGDON Co., PA., from bed 50 feet below top of *Hamilton, VIIIc.*

12799 214–1 Spirifera mucronata, Con. (1).
12800 214–5 Dalmanites boothii, Green (1).

Station No. 215 wanting.

Station No. 216 (the same as station No. 11), Perry Co., outcrops of the *Lower Helderberg chert beds, VI.*

12801 216–( ) unnamed (1).

12802 216–1 Strophomena rugosa, Dal. (3).
12803 216–2 Spirifera macropleura, Hall (5).
12804 216–3 Orthis eminens, Hall (4).
12805 216–4 Strophodonta varistriata, Con. (1).
12806 216–5 Spirifera octocostata? Sby. (2).
12807 216–6 unnamed (1).
12808 216–7 Eatonia singularis, Van. (1).
12809 216–8 Meristella arcuata, Hall (1).

Stations Nos. 217 to 221, wanting.

Station No. 222, at Mount Patrick, Buffalo township, Perry Co., from *Pocono sandstone formation X.*

12810 222–( ) unnamed (1).
12811 222–1 Lepidodendron stem. (1).
12812 222–2 unnamed (7).
12813 222–3 Lepidodendron leaves? (3).

Station No. 223, at Centre mills, Madison township, Perry Co., from *Marcellus beds, VIII b.*

12814 223–1 Ambocœlia umbonata, Con. (4).
12815 223–2 Phacops rana, Green (1).
12816 223–4 Discina (near) seneca, Hall (24).
12817 223–5 Leptœcelia acutiplicata, Con. (9).
12818 223–6 Strophodonta perplana, Con. (6).
12819 223–7 Orthis solitaria? (7).
12820 223–8 Goniatites (1).
12821 223–9 Corals (a box full).
12822 223–10 Pleurotomaria (1).
12823 223–15 unnamed (1).
12824 223–20 unnamed (1).

Stations Nos. 224, 225 wanting.

Station No. 226 (same as 24), at Thunder Hill, Honey creek station, near Lewistown, from *Hudson River shales, III b.*

12825 226–11 Tellinomya (4).

12826 226–( ) Raphistoma (6).
12827 226–( ) Leptæna rugosa (1).
12828 226–( ) Orthis testudinaria (2).
12829 226–( ) Stictopora ——— ? &c. (5).

Stations No. 227 to 230 wanting.

Station No. 231, at Girty's notch, Watts township, from the base of the *Hamilton upper shales VIII c.*

12830 231–( ) unnamed.

Station No. 232, wanting.

Station No. 233, near Roseburg, Saville township, from *Hamilton upper shales, VIII c.*

12831 233–( ) unnamed (8).
12832 233–1 Spirifera granulifera, Hall (2).
12833 233–3 Spirophyton ——— ? (1).
12834 233–4 Modiomorpha concentrica, Con. (1).
12835 233–5 Tropidoleptus carinatus, Con. (1).
12836 233–6 unnamed (5).
12837 233–7 Orthoceras nuntium, Hall (3).
12838 233–8 Spirifera mucronata, Con. (2).
12839 233–10 Chonetes setigerus, Hall (1).
12840 233–19 Actinopteria subdecussata, Hall (2).
12841 S 233–( ) Tropidoleptus carinatus (1).
12842 S 233–( ) Glyptodesma erectum (1).
12843 S 233–( ) Leiopteria dekayi (3).
12844 S 233–4 unnamed (1).
12845 S 233–6 unnamed (1).
12846 S 233–20 Strophodonta concava, Hall (3).

Station No. 234, wanting.

Station No. 235, I. C. White's collection, near Raystown branch of Juniata, in a *Chemung bed* 1650 feet beneath the assumed base of the Catskill formation.

12847 235–( ) unnamed (10).

Station No. 236, I. C. White's collections at Barre Forge, Huntingdon Co., Pa., from *Clinton lower shale, V a.*

12848 236–( ) unnamed (7).

Station No. 237, I. C. White's collection at the same (236), from limestone above *Clinton fossil ore, V a.*

12849 237–2 Rhynchonella neglecta, Hall (1).

12850 237–4 Atrypa intermedia, ? Hall (a pill-box full).

Station No. 238, I. C. White's collections at the mouth of the Raystown branch, Huntingdon Co., Pa., from *Chemung strata, VIII g.*

12851 238–1 Spirifera disjuncta, Sby. (1).

12852 238–2 Orthis impressa, Hall (1).

12853 238–4 Leptodesma beckii, Hall (1).

Station No. 239, I. C. White, James Creek, Huntingdon Co., *top of Hamilton, VIII c.*

12854 239–( ) unnamed (3).

Station No. 240, I. C. White, Murray's run, HUNTINGDON Co., from *Marcellus, VIII b.*

12855 240–( ) not named (4).

Station No. 241, I. C. White, near E. C. Summer's, HUNTINGDON Co., from *Marcellus, VIII b.*

12856 241 unnamed (18).

12857 241 Spirifera medialis, Hall (1).

12858 241 Rhynchonella —— ? (1).

Station No. 242, wanting.

Station No. 243, I. C. White, at Grafton, HUNTINGDON Co., *Hamilton, VIII c.*

12859 243–1 Spirifera mucronata, Con. (2).
12860 2 Orthonata undulata, Con. (1).
12861 3 Spirifera granulifera, Hall (1).
12862 4 Palæoneilo constricta, Con. (1).
12863 5 Chonetes coronatus, Con. (1).
12864 6 Tropidoleptus carinatus, Con. (1).
12865 7 Chonetes setigeras, Hall (1).

Station No. 244, wanting.

Station No. 245, I. C. White, on Broad Top RR., HUNTINGDON Co., *Hamilton, VIII c.*

12866 245–3 Phacops rana, Green (1).

Stations Nos. 246 to 249, wanting.

Station No. 250, at Mr. Stewart's, 2½ miles N. of Liverpool, Perry Co., in *Catskill rocks, IX.*

12867 250–( ) unnamed (10).
12868 250–1 unnamed (1).
12869 250–2 unnamed (5).
12870 250–3 unnamed (1).
12871 S–250 unnamed (8).

Station No. 251, at Cedar run, near Centre, Perry Co., from *Salina, V c.*

12872 251–S unnamed (1).

CATALOGUE OF SPECIAL COLLECTIONS OF FOSSILS.

Republished, in full form, from the skeleton catalogue published in Report OO, 1880, pages 231 to 239, after examination by George B. Simpson, Palæontologist, in the autumn of 1888.

I. Potsdam Sandstone?

No special collections were made in these strata in Pennsylvania. See **Scolithus linearis,** and **Arthrophycus montalto,** in Dictionary of Fossils, Report P 4, 1888–'9.

II*a*. Calciferous sandstone formation.
II*b*. Chazy limestone formation.
II*c*. Black-river, Birds-eye and Trenton limestone.

These constitute the lower *a*, middle *b*, and upper *c*, subdivisions of the Great Valley Limestone, corresponding *in part* to the "Lower Silurian" of Murchison, the "Upper Cambrian" of Sedgwick, the "Siluro-Cambrian," or Cambro-Silurian" of T. Sterry Hunt, the "Ordovician" of Lapworth, "Stages C, D," of Barrande, etc. Two or three thousand feet thick at Easton, Allentown, Reading, Lebanon, Harrisburg, Carlisle and Chambersburg, they make the limestone belt of the Great Valley; occupy the floor of Path Valley, Horse Valley, Connellsville cove, Friends cove, Milliken's cove, Morrison's cove, Canoe, Sinking, Nittany, Brush, Pine and Kishicoquillis valleys, where they exceed in total thickness six thousand (6,000) feet. The Calciferous (*a*) is almost nonfossiliferous; the Chazy (*b*) slightly fossiliferous; the Trenton group (*c*) filled with a great variety of forms of animal life; Bellefonte, in Centre county, and Reedsburg, in Mifflin county, being the best explored and most remunerative localities.

Reedsville, Mifflin county, collections made by A. Hale and C. E. Hall, May, 1875, just above mill dam, at the upper end of Jacks mountain gap into Kishicoquillis valley. *Trenton limestone, II c.*

201–1 Homalonotus trentonensis, Simpson (new species).
201–2 obscure specimen.
201–3 Orbicula metoptoma (labeled by C. E Hall).
201–4 Homalonotus trentonensis, Simpson, n. s.
201–5 Orthoceras, interior, very poor.
201–6 a trilobite head, interior, very poor.
201–7 obscure.
201–8 Homalonotus trentonensis? poor head.
201–9 a trilobite tail with broken margin.
201–10 Homalonotus trentonensis, poor tail.
201–11 Homalonotus trentonensis, impress of head.
201–12 Homalonotus trentonensis, head.
201–13 a trilobite, very poor.
201–14 a trilobite, small fragment of rib.
201–15 obscure.
201–16 a trilobite, very poor rib.
201–17 Homalonotus trentonensis, head, fairly good.
201–18 a trilobite tail, very good.
201–19 a trilobite tail, fairly good, same species.
201–20 a trilobite, very poor fragment of rib.
201–21 Homalonotus trentonensis, tail, fair.
201–22 obscure.
201–23 Homalonotus trentonensis, head, poor.
201–24 Homalonotus trentonensis, tail, impression.
201–25 Homalonotus trentonensis, tail.
201–26 Homalonotus trentonensis, head.
201–27 Homalonotus trentonensis, head, impression.
201–28 obscure.
201–29 Homalonotus trentonensis, tail.
201–30 Homalonotus trentonensis, head, small.
201–31 Homalonotus trentonensis, tail.
201–32 Homalonotus trentonensis, tail.
201–33 Homalonotus trentonensis, ? tail, small.
201–34 Homalonotus trentonensis, tail, poor.
201–35 Homalonotus trentonensis.

D. Campbell's, Mifflin county, collections made by C. E. Hall, May, 1875, about seven miles S. W. of Reedsville, on the northwest side of Kishicoquillis valley, opposite the house, in the *upper beds of the Trenton limestone, II c.*

202–1 Bryozoa, many fragments, requiring much study.
Orthis testudinaria, fragments, in poor condition, on the opposite side of the stone.
202–2 Orthis testudinaria, some casts excellent for drawing.
202–3 Bryozoa, resembling Orthopora, new species, unless described by Ulrich from Wisconsin.
202–4 Bryozoa, obscure branching forms, fragments.
Orthis testudinaria, on opposite side of the same stone, poor.

Bellefonte, Centre county, collections made by C. E. Hall, May, 1875, on the north side of the creek, a quarter of a mile west of Bellefonte, from *Trenton limestone, II c.*

203–1 Orthis testudinaria (forty specimens).
203–2 Chætetes lycoperdon. (A, the largest, on the corner of the slab, shows fairly well for drawing, the others serve to make the slab a good exhibition of growth).
203–3*a* Trinucleus concentricus, fragments, poor.
203–3*b* Orthis testudinaria, fragments.
203–4 Crinoid stems covering outside of a slab, but showing only their broken ends.
203–5 Chætetes lycoperdon.
203–6 Bryozoa, numerous examples, not distinct.
203–6*a* Orthis testudinaria, fair specimens.
203–7 Chætetes lycoperdon, four examples on a slab.
203–8A Stictopora acuta? *beautiful example.*
203–8B Leptæna sericea, one or two interiors on the slab, excellent to draw; exteriors not so good as on other slabs in the collection.
203–9 Bellerophon? obscure.
203–9A Strophomena alternata, fragments.
203–10 Bryozoa, many fragments, obscure.
203–11 Chætetes lycoperdon, poor.
203–11A Lingula, excellently well exhibited; with
Trinucleus concentricus, head, poor; and
Tentaculites, fragments.

203–12 Ceramopora ——?
203–13 Trinucleus concentricus, half of a cheek, well delineated.
203–14 Orthis testudinaria, fairly good.
203–15 Chætetes lycoperdon.
203–16 Trematopora, fragments.
203–17 Trinucleus concentricus, numerous impressions.
203–18 Monticulipora pulchella, very poor.
203–19 Trinucleus concentricus.
203–20 Chætetes lycoperdon.
203–21 a gasteropod, crushed.
203–22 Chætetes lycoperdon (15 specimens). From the three marked A, B, C, an excellent drawing could be made.
203–23 Trinucleus concentricus.
203–24 Strophomena alternata, fragments.
203–24 Trinucleus concentricus, fragments.
203–25 Trinucleus concentricus two half heads, one fair.
203–26 Beyrichia ——? numerous individuals, none of them well delineated.
Bryozoa, fragments needing study.
Crinoidal stems in small fragments.
203–26 Zygospira modesta.
203–27 Orthis testudinaria, fair.
203–27A Strophomena alternata, fragment.
203–27B Trinucleus concentricus, fairly well delineated, but not the best.
203–28 Orthis testudinaria, among which that marked A (dorsal valve) may be used.
203–29 Beyrichias, several *good interiors*.
Crinoidal stems, mostly sections.
203–30 Orthis testudinaria, one a dorsal valve fairly well delineated.
203–31 Orthis testudinaria, not the best.
203–32 Calymene beckii, head, imperfect.
203–33 Chætetes lycoperdon, two specimens, poor.
203–34 Beyrichia——? many interiors.
Crinoid stems, fragments.
203–35 Chætetes lycoperdon, of which A, a large one is very fairly shown; B, the smaller, not so good.
203–36A Orthoceras——? encrusted with bryozoa.

203–36B Orthis testudinaria, small fragment.
203–37 Bryozoa, branching, numerous fragments, mostly very poor.
203–38 Beyrichia ——?
203–38*a* Crinoid stems.
203–38 Orthis testudinaria, small, poor.
203–39 Crinoid stems and Bryozoa, in fragments.
203–40A Orthis testudinaria, many individuals mixed with ——
203–40B Trinucleus concentricus, fragments of heads, not well delineated.
203–41A Chætetes lycoperdon.
203–41B Orthis testudinaria, interior, with ——.
203–41*c* Bryozoan fragments, numerous.
203–42 Chætetes lycoperdon, *good for delineation of its wall structure.*
203–43 Bryozoa ——? numerous and not good.
203–43A Crinoidal stems, fragments.
203–43B Orthis testudinaria.
203–44 Zygospira modesta, several individuals.
203–44A Spirorbis——? numerous, *good to draw.*
203–44B Chætetes lycoperdon, *good to draw*, showing a particular stage of growth in the coral.
203–45 Chætetes (Monticulipora) lycoperdon.
203–46 Leptæna sericea, with
Orthis testudinaria,
Stictopora——? and
Bryozoa——? branching, needing study.

Reedsville, Mifflin county, collections made by W. A. Fellows, September, 1875, just above the mill dam, at the exit of Kishicoquillis creek through Jack's mountain, from *Trenton limestone, II c.*

204–1 Homalonotus trentonensis, head.
204–2 Homalonotus trentonensis, tail.
204–3 Strophomena alternata, poor.
204–4 Homalonotus trentonensis, tail, poor.
204–5 Homalonotus, two tails, *good for drawing.*
204–6 Strophomena alternata, very poor.
204–7 Orthis costatus (old label), impression.

204–8 Homalonotus trentonensis, part of head.
204–9 Endoceras proteiforme, poor impression.
204–10 obscure.
204–11 Endoceras proteiforme, very poor.
204–12 Orthis testudinaria, dorsal valve.
204–13 Homalonotus trentonensis, head, *fairly good.*
204–14 Endoceras proteiforme, *showing septa* fairly well.
204–15 Orthis testudinaria.
204–16 Homalonotus trentonensis, head.
204–17 Homalonotus trentonensis, part of head.
204–18 Strophomena alternata, *good.*
204–19 Homalonotus trentonensis, the impression of specimen 204–5 above.
204–20 Endoceras? proteiforme? shell mostly gone.
204–21 a trilobite, very poor.
204–22 Homalonotus trentonensis, tail obscure.
204–23 Endoceras——? obscure.
204–24 Homalonotus trentonensis, tail, poor.
204–25 Endoceras——? crushed.
204–26 Homalonotus? part of head.
204–27 Orthoceras? Endoceras? crushed.
204–28*a* Endoceras——? and
b Homalonotus trentonensis, head and tail small.
204–29 Homalonotus trentonensis, head, fairly good.
204–30 Brachiopod shells, obscure.
204–31 a gasteropod, obscure.
204–32 Endoceras, scarcely visible.
204–33 Homalonotus trentonensis, head, poor.
204–34 Lingula oblonga, not well delineated.
204–35 Homalonotus trentonensis.

Reedsville, Mifflin county, collections made by C. E. Hall, 1875, just east of the summit of the road, before reaching the limekiln, on the north side of Kishicoquillis Creek, from strata which are probably *below the Trenton limestone beds*, that is from *Upper Chazy beds, II b?*

205–1 Modiolopsis faba.
205–2 Bathyurus extans, (thirty specimens, among which are (18) Zygospira modesta,

205–2 (19) Raphistoma lenticularis, partly exposed, and
(20) Modiolopsis faba.

Martin's Creek, Northampton county, collections made by C. E. Hall and W. A. Fellows, July, 1876, at quarries in *Trenton limestone, II c.*

206–1 a geological hand specimen.
206–2 a geological hand specimen.
206–3 Orthis pectinella? very poor.
206–24 Atrypa reticularis.

Martinsburg, Blair county, collections made by F. Platt, Oct., 1875, in Morrison's Cove, one mile S. W. of the village, from *Chazy limestone beds, II b.*

207–1 a good lithological specimen containing numerous indistinct impressions, among which may be recognized
(19) Raphistoma lenticularis, and
(20) Modiolopsis faba.
207–2 Raphistoma lenticularis, and
Modiolopsis faba.

Williamsburg, Blair county, collections made by F. Platt, 1875, half a mile east of the town, on the Juniata river, from limestone strata very low down in the series, that is, towards the bottom of the *Calciferous, II a.* Specimens not in this special collection.

Fredericksburg, Blair county, collections made by R. H. Sanders, 1875, four hundred yards east of the village, from the lower part of the Trenton group, i. e. the *Black River limestone, II c.*

209–1 Gasteropod, in section, on a slab
209–2 Chætetes ——— ? slab.
209–3 Trilobite, very obscure.

209–4 Chætetes lycoperdon, *showing its structure very plainly.* See Hall, Pal. N. Y. Vol. 1, pl. 21, fig. 1, g.
209–5 Trilobite, spoiled by decomposition.
209–6 Trilobite, in extremely poor condition.

Bellefonte, Centre county, collections made by W. A. Fellows, 1876, from *Trenton limestone, II c.*

210–1 Leptæna sericea, several ventral and dorsal valves, one ventral interior fair. The dorsal valves make a very pretty slab.
210–2 Strophomena alternata, dorsal valves, four of the interiors in fair condition.
210–3A Trinucleus concentricus, in fair condition, with
B Orthis testudinaria.
210–4 Orthis testudinaria, dorsal valve quite good, but a little distorted.
210–5*a* Trinucleus concentricus. not very good.
b Strophomena alternata, the convex valves have their margins destroyed.
210–6 Leptæna sericea, *a mass of them*, mostly broken or crushed.
210–7 Orthis testudinaria, ventral valve, and cast of dorsal valve.
210–8 Orthis testudinaria, fairly good ventral interior.
210–9 Orthis testudinaria, *good for figure.*
210–10 Strophomena alternata, fragments;
Trinucleus concentricus, *excellently well exhibited*, one head, another partly preserved.
210–11 Leptæna sericea; A, fair for drawing, B, interior of ventral value *excellently shown.*
210–11*c* Orthis testudinaria.
210–12 Trinucleus concentricus, head, *well preserved*, and fragments of others.
210–13*a* Strophomena, two fragments.
b Trinucleus concentricus, head, front.
210–14 Beyrichia —— n. s. (G. B. S.).
210–15 Trinucleus concentricus.
210–16 lithological specimen.
210–17 Trinucleus concentricus, head.

210–18 Orthis testudinaria, very poor, with
Trinucleus concentricus, poor fragments.
210–19 Triniculeus concentricus, head, fragment.
210–20 Strophomena alternata, mass of fragments.
210–21 Beyrichia —— n. sp. (G. B. S.) casts.
210–22 Crinoid stems, fragments.
210–23 Trinucleus concentricus, fragments.
210–24 Strophomena alternata, small fragment.
210–25A Strophomena alternata, fragment, with
B Chætetes ——? and
C Trinicleus concentricus, head, fair.
210–26 Bryozoa, branching, with
a Orthis testudinaria and
Zygospira modesta.
210–27 Orthis testudinaria, ventral interior, *very good.*
210–28 Bryozoa, branching with
Chætetes lycoperdon, and
Orthis testudinaria, fairly well shown.
210–29*a* Orthis testudinaria, interior, *good*; with
b Bryozoa, branching, numerous fragments in fair condition for delineation.
210–30 Leptæna sericea, mostly poor interiors.
210–31 Trinucleus concentricus, poor fragments.
210–32 Trinucleus concentricus, head, *very good.*
210–33*a* Trinucleus concentricus, fragments, especially heads, one of which is *very good.*
210–33*b* Strophomena alternata, ventral valve, *good.*
210–34 Trinucleus concentricus, fragments, but one head is *very good.*
210–35 Miscellaneous fragments.
210–36 Trinucleus concentricus, fragments of head in fair condition.
210–37 Edmondia subtrunca, poor impression.
210–38 a lithological specimen.
210–39 brachiopod shells, crushed fragments, with
a trilobite fragment.
210–40 Trinucleus concentricus, fragments.
210–41 Trinucleus, fragments of heads.
210–42 Bryozoa, branching, fragmental.
210–43 Chætetes abruptus?

210–44 Leptæna sericea, fragments, with
210–44*a* Orthis pectinella, var. ovalis? *good.*
210–45 Chætetes lycoperdon, fragments of interior showing the tubes.
210–46*a* Strophodonta alternata, two individuals, in fair condition, with
210–46*b* Trinucleus concentricus, fragment of head, in fair condition.
210–47 Murchisonia gracilis, three specimens, much worn and very poor.
210–48 Orthis testudinaria.
210–49 Chætetes lycoperdon, weathered.
210–50 Leptæna sericea, small, numerous fragments.
210–51*a* Strophomena alternata, mostly broken.
210–51*b* Trinucleus concentricus, fragments.
210–52 Camarella hemiplicata, poor.
210–53*a* Trinucleus concentricus, head *shield and spine:* and *b* a fairly preserved *spine.*
210–54*a* Strophomena alternata, two dorsal and one ventral valve, broken, with
210–54*b* Trinucleus concentricus, fragments.
210–55 Chætetes lycoperdon, *surface very good.*
210–56 lithological specimen.
210–57 Bryozoan fragments.
210–58 Cypricardites subtruncatus, in fair condition, but with margins much broken.
210–59*a* Fragments of gasteropods, and
b Strophomena alternata, ventral valve, fair; also
c Trinucleus concentricus, head fragment.
210–60 Strophomena alternata, *very good.*
210–61*a* Leptæna sericea, poor, and
b Cypricardites subtruncata, two impressions.
210–62*a* Monticulipora pulchella, with
b Strophomena alternata, several gibbous shells in fair condition.
210–63 Chætetes lycoperdon; *surface excellent.*
210–64 Chætetes lycoperdon, skin (epitheca) *very good.*
210–65 Chætetes lycoperdon, hemispheres in *good condition.*
210–66 Orthis testudinaria, a whole slab full of them, *finely illustrating their collective mode of life.*

210–67*a* Calymene senaria, two individuals, with
b Chætetes lycoperdon, three individuals.
210–68 a lithological specimen.
210–69*a* Strophomena alternata, fair, with
b Chætetes lycoperdon, the epitheca of which is *in very good preservation.*
210–70 Orthis pectinella (Rogers, 1858, page 818; but probably not rightly named,) two individuals, one quite large, and both *very good.*
210–71 Chætetes lycoperdon, in masses, *showing the tubes fairly well.*
210–72*a* Chætetes lycoperdon, skin (epitheca) fairly good,
b Stropnomena alternata, broken, and
c Trinucleus concentricus, poor.
210–73 Chætetes lycoperdon, skin fairly good.
210–74 Tentaculites ——? on a large slab with Bryozoan fragments, *many and beautiful.*
210–75 Spirorbis, impression, of small value.
210–76 Leptæna sericea, outside and inside *fairly good* and *good.*
210–77*a* Camarella (Atrypa) ambigua, with
b Strophomena alternata, on a block which as a whole *illustrates these forms very well.*
210–78*a* Strophomena alternata, fragments, with
b Trinucleus concentricus, fragments, poor.
210–79 ——— *a beautiful fossil.*
210–80*a* Strophomena alternata, ventral valve in fair condition, with
210–80*b* Trinucleus concentricus, several fragments, some of them in fair condition.
210–81 Trinucleus concentricus,
210–82*a* Orthis testudinaria, fair, with
b ——— many fragments of a fossil form in fair condition for determination.
210–83 Palæophycus simplex, in fair condition. See Hall, Pal. N. Y., Vol. 1, p. 63. plate 22.
210–84*a* Strophomena alternata, *good*, with
b Trinucleus concentricus, fragments.
210–85 Trinucleus concentricus, fragments of heads, poor.
210–86 Strophomena alternata.

210–87 Chætetes lycoperdon? fair.
210–88 Strophomena alternata, dorsal and ventral valves, both broken.
210–89 Buthotrephis succulens, poor.
210–90 Leptæna sericea, outside and inside, poor.
210–91 Trinucleus concentricus, fragments of heads, some of them in fair condition.
210–92 a trilobite fragment.
210–93 Leptæna sericea, many individuals, mostly interiors, and poorly preserved,
210–94 Buthotrephis succulens? numerous individuals. See Hall, report of 1843, p. 62, plate 22.
210–95 Strophomena alternata, small fragment, part of one margin gone, *the remainder perfect.*
210–96 Chætetes lycoperdon, with
Trinucleus concentricus, fragments of heads, poor.
210–97*a* Asaphus obtusus, with
b Strophodonta filitexta?
c Camarella hemiplicata, and
d Strophomena alternata.
210–97*bis a* Strophomena alternata, several fragments, fair to good.
210–97*bis b* Trinucleus concentricus, mostly poor fragments of heads.
210–98 Orthis testudinaria? poor condition.
210–99 Bryozoa, obscure fragments.
210–100 Chætetes lycoperdon? with
Trinucleus concentricus, mostly fragments of heads, some good.
210–101 Chætetes lycoperdon, very poor.
210–102 Trinucleus concentricus, numerous and distinct, mixed with other and indistinct forms.
210–103 Leptæna sericea, *a large slab covered with individuals.*
210–104 Trinucleus concentricus, mostly poor fragments.
210–105*a* Chætetes lycoperdon, three sections, fairly good, mixed with brachiopod shells of uncertain species.
210–106 Bryozoa, mostly fragmental.
210–107 Bryozoa and other indistinct forms.

210–108 Trinucleus concentricus, mostly fragments, but one individual complete but a little distorted by pressure.
210–109 Chætetes lycoperdon, *a good section.*
210–110 Leptæna sericea, mostly interiors and ventral valves, some of them *excellent.*
210–111*a* Orthis testudinaria, *several very good examples.*
b Leptæna sericea, many interiors, *good.*
210–112 Chætetes lycoperdon, showing interior tubes, but not well.
210–113 Cypricardites ventricosus, two individuals.
210–114 Leptæna sericea, mostly interiors of the ventral valve, in fair condition.
210–115 Chætetes (resembling) arbusculus of the *Lower Helderberg formation*, but in a bad condition for identification.
210–116*a* Crinoid stems, many fragments; with
b Leptæna sericea, mostly interiors, fair;
c Orthis testudinaria; and
d Stictopora ——? *good*, with fragments of other forms, obscure.
210–117*a* Orthis testudinaria, etc., fragments and
b Bryozoa, mostly very poor.
210–118 Chætetes lycoperdon, a slab showing the interiors of several, with tubes more or less plainly exhibited.
210–119 Leptæna sericea, dorsal valve and ventral interior.
210–120 Illænus ——? a small fragment.
210–121*a* trilobites, broken portions; also
b Stictopora acuta, *good;* and
c Bryozoa, *very good.*
210–122 a trilobite's *hypostoma*, *very good.*
210–123 Leptæna sericea, a slab with numerous specimens, many of them interiors, and *excellent for illustrating mode of social life.*
210–124 Trinucleus concentricus, poor fragments of heads.
210–125 Brachiopod fragments.
210–126 Leptæna sericea, fair, with.
210–126*a* Strophodonta alternata; *the whole slab making a fine exhibition.*
210–127 Strophodonta alternata, much crushed.

210–128 Trilobite head.
210–129 Strophodonta alternata, several broken specimens.
210–130 Trilobite among brachiopod fragments.
210–131 Trinucleus concentricus, mostly fragments of heads, poor.
210–132 Chætetes lycoperdon, very poor.
210–133 (16) Strophomena alternata, fair.
(10) Trinucleus concentricus, poor.
210–134 (1) Orthis pectinella, *good.*
(2) Leptæna sericea.
210–135 (2) Leptæna sericea, fair; with
(9) Calymene senaria, two poor specimens, and
(13) Stictopora ——? *very good.*
210–136 (10) Trinucleus concentricus, poor; with
(11) Orthis testudinaria, fair.
210–137 (21) Cypricardites ventricosus.
210–138 (17) Orthis tricenaria, poor; with
(18) Zygospira modesta.
210–139 Cypricardites ventricosus, *good.*
210–140 (1) Orthis pectinella, one or two of them *very good;* with
(3) Orthis tricenaria, young individuals.
(4) Strophomena alternata, young individuals, and
(8) Plumulites jamesii.
210–141 (2) Leptæna sericea.
(9) Calymene senaria, poor.
(12) Beyrichia ——?
210–142 Stictopora acuta.
210–143 Obscure.
210–144 Chætetes ——? a slender branching species *with frequent spots of larger cells.*
210–145 Obscure plant remains.
210–146*a* Strophodonta alternata, with
b Leptæna sericea.
210–147 Calymene senaria, with
Pholidops trentonensis;
Asaphus ——? a hypostome;
Orthis testudinaria, and
Leptæna sericea.
210–148*a* Ceraurus pleurexanthemus, and

210–148*b* Trinucleus concentricus.
210–149*a* Strophodonta alternata, and
b Orthis testudinaria.
210–150 Asaphus obtusus, with
Atrypa altilis.
210–151 Obscure plant remains.
210–152 Strophodonta ——? with concentric striæ strongly nodose.
210–153 Chætetes lycoperdon.
210–154 Orthis testudinaria.

Tyrone forge, Huntingdon county, collections by W. A. Fellows, August, 1876, from the Little Juniata river bluff below the covered bridge above the forge; *Trenton limestone, II c.*

211–1*a* Chætetes fragments, indistinct, with
b Rhynchonella capax, fragments.
211–2 Bryozoan fragments; among them are
a Escharopora (Ptilodictya) recta.
211–3*a* Rhynchonella capax among
b Escharopora recta fragments, fairly good.
211–4*a* Rhynchonella capax, fair, with
b Stictopora ——? *very good.*
211–5 Rhynchonella capax.
211–6 Bryozoum fragment.
211–7*a* Escharapora recta, *good*, with
211–7 (22) Rhynchonella capax;
(23) Retepora (See Hall. Pal. N. Y. Vol. 1);
(24) Asaphus ——?;
(25A) Chætetes (see Pal. N. Y. Vol. 1); and
(26) Ceraurus ——?
211–8 (10) Trinucleus concentricus, poor; with
(17) Orthis tricenaria, interior of dorsal valve;
(18) Zygospira modesta;
(22) Rhynchonella capax;
(28) Cornulites flexuosus.
(39) Escharapora recta; &
(31) Illænus ——? a head.
211–9 Bryozoa, *several interesting forms;* with
(18) Zygospira modesta;

211–9 (22) Rhynchonella capax; &
(25) Monticulipora pulchella.

Tyrone forge, Huntingdon county, collections made by W. A. Fellows, August, 1876, at the hill top on the road from the forges to Warrior's Mark, from *Trenton limestone, II c.*

212–1 Trinucleus concentricus impressions.
212–3 Trinucleus concentricus, mostly fragments.
212–4 Orthis testudinaria, *about ten individuals on a slab only three inches square.*
212–5 Orthis testudinaria.
212–6 Orthis testudinaria.
212–7 Trinucleus concentricus heads, poor.
212–8 Strophomena alternata, and
Trinucleus concentricus, numerous fragments.

Tyrone forge (Nearhoff's quarry), Huntingdon county, collections by W. A. Fellows, August, 1876, on Copley Nearhoff's farm, 1½ miles north of the forges, from *Trenton limestone, II c.*

213–1 Ptilodictya? (chætetes?)
213–2 Chætetes lycoperdon? probably another (slender branching) species.
213–3 Stictopora elegantula.
213–4 Chætetes ——? branching, slender.

Belleville, (Campbell's quarry,) Mifflin county, collections made by C. E. Billin, November, 1876, at Douglass Campbell's, 2 miles from the village, from strata at the top of the *Trenton limestone, II c.* (Catalogued elsewhere.)

Bellefonte, Centre county, collections made by C. E. Hall, May, 1875, from the outcrop of *Utica slate, III a.*

301–1 Triarthrus beckii, (forty-four individuals.)

Bellefonte, same collections, but from the *lime shale passage beds* from *Trenton limestone Utica slate II c—III a.*

302–1 Crinoid stems, fragmental and poor.

Henrietta station, Bedford county, collections made by R. H. Sanders, Nov. 1875, at station 2852′ of his transit line on bench of Tussey mountain, 2½ miles S. W. of Henrietta station, from *Loraine (Hudson river) shale formation, III b.*

303–1 various brachiopods of undetermined species (ten specimens).

Henrietta mine, Blair county, collections made by R. H. Sanders, Nov. 1875, 1½ miles S. W. of the mine, from *Loraine (Hudson river) shales, III b.*

304–1 Crinoid stem sections.
304–2 Glyptocrinus decadactylus, stem impression, very poor.
304–3 Glyptocrinus decadactylus.
304–4 Bryozoan impression, branching, obscure.
304–5 Crinoid stem impressions (eight specimens).
304–6 Glyptocrinus decadactylus, stem impressions (seven specimens).
304–7 Crinoid stem impressions (two specimens).

Henrietta furnace, Bedford county, collections made by R. H. Sanders, November, 1875, on the back of the Leathercracker anticlinal, south side of Morrison's Cove, from *Loraine (Hudson river) shale, IIIb.*

305–1 Crinoid stem impressions (nine specimens) very poor, much decomposed.
305–2 obscure.
305–5 Schizodus æqualis.
305–18 Dalmanites limulurus, head, fairly well shown.
306–1 lithological specimen.
306–2 lithological specimen.
306–3 five lithological specimens.
306–4 Graptolites, very indistinct impressions.
306–5 Graptolites, very faint traces.
306–6 obscure.
306–7 Graptolite impressions, poor.
306–8 lithological specimen.

306–9 lithological specimen.
306–10 obscure.
306–11 Graptolithus mucronatus?
306–12 Graptolite, very small fragment.
306–13 Calymene (Triarthrus) beckii.

Bellefonte, Centre county, collections made by W. A. Fellows, 1876, from the northwestern Nittany valley outcrop of the *Utica slate, IIIa.*

307–1 Triarthrus (Calymene) beckii. Forty-seven hand specimens, some of them slabs, showing on their surfaces numerous fragments of this trilobite; mostly heads; comparatively few bodies, and these nearly all more or less crushed and distorted; tail pieces are comparatively rare.
307–2 Triarthrus (Calymene) beckii, thirty-five other specimens of the same trilobite.

Port Clinton, Schuylkill county, collected by H. M. Chance, July, 1874, in the gap of the Schuylkill river through the Kittatinny mountain, from the *Oneida conglomerate, IVa.*

400–1 Arthrophycus harlani (five specimens).

Greenwood, Huntingdon county, collected by C. E. Billin, 1876, on Broad mountain, opposite the furnace, from the *Medina white sandstone, IVc.*

401–2 Arthrophycus harlani (two specimens).

McKeesville, Mifflin county, collections by A. Hale and C. E. Hall, May, 1875, at McKee's ore bank, N. E. of McKee's house, in Furguson Valley, seven miles from Lewistown, from the shales overlying the *Clinton fossil ore bed, Va.*

501–1 Avicula emacerata, and
Strophomena rhomboidalis, fragment.
501–2 Streptorhynchus subplana, *good example*, and
Streptorhynchus tenuis, cast of ventral valve.
501–3*a* Streptorhynchus subplana, and

501–3 Streptorhynchus tenuis cast of ventral valve.
501–4 Streptorhynchus tenuis cast of ventral valve.
501–5 Dalmanites limulurus, impress of head, *very good.*
501–6 Streptorhynchus tenuis.
501–7 Strophodonta striata, fragment.
501–8 Actinopteria emacerata.
501–9 Dalmanites limulurus.
501–10 Streptorhynchus tenuis.
501–11 Dalmanites limulurus, two examples.
501–12 Orthis el gantula, variety.
501–13 Strophomena depressa.
501–14 Rhynchonella stricklandi.
501–14*b* Strophodonta profunda.
501–15 Brachiopod fragments.
501–16 Beyrichia lata.
501–17 a small trilobite fragment.
501–18 Avicula emacerata.
501–19*a* Modiolopsis subalata.
501–19*b* Actinopteria emacerata.
501–20 **Tellinomya** (*Palæoneilo*) **cuneata** *New species.* impress of dorsal valve.
501–21 Homalonotus delphinocephalus, tail, poor.
501–22 Streptorhynchus tenuis.
501–23 Homalonotus delphinocephalus, body and tail, *fairly well shown.*
501–24 Actinopteria emacerata, *in good condition*, and Telenomya (Palæoneilo) cuneata. *New species.*
501–26 Avicula emacerata (Conrad, 1842).
501–26*a* Streptorhynchus tenuis.
501–26*b* Dalmanites limulurus, *impression of eye.*
501–27 Streptorhynchus tenuis.
501–28 Homalonotus delphinocephalus, fragment of head.
501–29 Streptorhynchus tenuis.
501–30 **Orthis subcircula,** *new species.* Simpson. Two examples.
501–31 Strophomena depressa.
501–32 Avicula rhomboidea.
501–33 Dalmanites limulurus, three examples.
501–34 Homalonotus delphinocephalus, fragment of the body of the trilobite.

501–35 Orthis elegantula.
501–36 Homalonotus delphinocephalus, two fragments of heads, poor.
501–37 Rhynchonella bidens?
501–38 Dalmanites limulurus tail.
501–39 Lyrodesma poststriata.
501–40 Modiolopsis subalatus.
501–41 Orthis subcircula, **new species.** Simpson. Three examples.
501–42 Orthis subcircula, **new species,** and other brachiopods.
501–43 Tellinomya (Palæoneilo) diminuens, new species. Simpson.
501–43 Homalonotus delphinocephalus.
501–44 Streptorhynchus tenuis.
501–45 a gasteropod fragment.
501–46 Tellinomya elleptica.
501–47 **Modiolopsis subrhomboidea.** *New species*, Simpson.
501–48 Nucula sinuosa.
501–48 Tellinomya cuneata.
501–49 Leptæna striata.
501–50 Modiolopsis subalata.
501–51 Nucula sinuosa.
501–201 Tellinomya (Palæoneilo) cuneata, *new species.* Simpson.

McKeesville, Mifflin county, collections by A. Hale and C. E. Hall, May, 1875, at ore opening about one mile north-west of McKee's house, from the shales above *Clinton Fossil ore bed. V a.*

502–1 Beyrichia lata, with
Homalonotus delphinocephalus tail, large, and
Orthis elegantula.
502–2 Orthis elegantula, numerous valves on slab, with reverse of the last, and
Streptorhynchus tenuis, cast of ventral valve.
502–3 Dalmanites limulurus, impressions of fragments, with Strophodonta striata, impression.
502–4 Crinoidal stem fragments.

502–5 Beyrichia symmetrica.
502–6 Streptorhynchus tenuis, impressions of both valves.
502–7 ditto, casts.
502–8 Homalonotus delphinocephalus head, small, poor.
502–9 Modiolopsis subalatus (nine specimens).
502–10 **Nucula subtrigona,** *new species*, Simpson.
Tellinomya (*Palæoneilo*) **diminuens.** *New species.* Simpson.
502–11 Nucula subtrigona, *new species*, Simpson.
502–12 Orthis elegantula.
502–13 Dalmanites limulurus, tail, impression.
502–14 Dalmanites limulurus, head, good.
502–15 Rhynchonella hemispherica (two examples).
502–16 Nucula sinuosa, *new species*, Simpson.
Tellinomya cuneata (Pyrenomoeus cuneata).
502–16*a* Strophomena rhomboidalis.
502–16*b* Modiolopsis subalata.
502–16*c* Strophomena rhomboidalis.
502–17 Homalonotus delphinocephalus, head fragments.
502–18 Homalonotus delphinocephalus, heads and tails, *good.*
502–19 Homalonotus delphinocephalus, head fragment.
502–20 Streptorhynchus tenuis, ventral valve, *good.*
502–21 Homalonotus delphinocephalus, head; and
Tellinomya elliptica, compare Glossites. Hall, Vol. 5.
Nucula subtrigona, N. Sp. Simpson.
502–22 Dalmanites limulurus, head fragment.
Streptorhynchus tenuis.
502–23 Beyrichia lata, with
Orthis elegantula, and
502–23*b* Streptorhynchus tenuis, ventral valve, cast.
502–24 Homalonotus delphinocephalus, head, large, fair condition.
Strophomena rhomboidalis.
502–25 Streptorhynchus tenuis, and casts.
502–26 Orthis elegantula.
502–27 Dalmanites limulurus, tail, very small.
502–28 Orthis elegantula.
502–29 Dalmanites limulurus, tail, impression.
Orthis elegantula, with
Streptorhynchus tenuis.

502–30 obscure.
502–31 lithological specimen.
502–32 Beyrichia symmetrica.
Homalonotus delphinocephalus.
502–33 Crinoid stems, very poor.
502–34 Homalonotus delphinocephalus, head.
502–35 obscure.
502–36 Homalonotus fragments.
Streptorhynchus subplana.
502–37 lithological specimen.
502–38 Dalmanites limulurus, tail.
502–39 Streptorhynchus tenuis, casts.
502–40 fragments.
502–41 Beyrichia symmetrica.
502–42 Orthis elegantula.
*502–43 **Nucula subtrigona**, *new species*, *Simpson*.
502–43 Rhynchonella ——?
502–44 Tellinomya machæriformis.
502–45 Homalonotus delphinocephalus, two heads and four tails, with
502-45*a* Strophodonta striata.
502–45*b* Rhynchonella (Stenochisma) neglecta.

Matilda furnace, Mifflin county, collections by A. Hale and C. E. Hall, May, 1875, from the shale above the *Clinton fossil ore bed V a*.

503–1 Leptocoelia hemispherica.
503–2 Leptocoelia hemispherica.
503–3 Atrypa reticularis, much crushed.
503–4 lithological specimen.
503–6 Atrypa reticularis, poor impressions.
503–7 Leptocoelia hemispherica.
503–8 Atrypa reticularis, poor impressions.
503–9 Atrypa plicatula.
503–10 Strophodonta striata.
503–11 Homalonotus delphinocephalus, with
Strophodonta striata.
503–12 obscure fragments.

503–13 Homalonotus delphinocephalus, tail fragments.
503–14 lithological.
503–15 Rhynchonella (Stenochisma) neglecta.
503–16 Strophodonta striata.

Orbisonia, Huntingdon county, collections by A. Hale and C. E. Hall, April, 1875, from the shale above *Clinton ore bed V a.*

504–1 Strophomena rhomboidalis.
504–2 Strophodonta striata.
504–3 Dalmanites limulurus, tail in fair condition.
504–4 fragments.
504–5 Strophomena rhomboidalis.
504–6 Dalmanites limulurus, tail impression.
504–7 fragments.
504–8 obscure fragments.
504–9 Strophomena rhomboidalis.
504–10 Beyrichia lata.
504–11 Strophomena rhomboidalis.
504–12 Strophodonta striata.
504–13 Avicula emacerata.
504–14 Rhynchonella stricklandi.

McKeesville, Mifflin county, collections of G. H. Christian, C. A. Ashburner, and A. Hale, 1874, at McKee's ore bank, from shale above the *Clinton ore bed, V a.*

505–1 Rhynchonella stricklandi.
505–2 Dalmanites limulurus, *two good tails.*
505–3 Dalmanites limulurus, *perfect impression of head.*
505–4 Aclinopteria emacerata.
505–5 Homalonotus delphinocephalus.
505–6 Dalmanites limulurus.
505–7 Homalonotus delphinocephalus.
505–8 Strophomena rhomboidalis.
505–9 Rhynchonella (Stenochisma) neglecta.
505–10 Streptorhynchus tenuis.
505–11 Nucula sinuosa, *new species*, Simpson.
505–12 Strophomena rhomboidalis.

505–13 Streptorhynchus tenuis.
505–14*a* Platystoma niagarense.
505–14 Rhynchonella stricklandi.
505–15 Dalmanites limulurus, head, *good.*
505–16 Rhynchonella stricklandi.
505–17 Dalmanites limulurus, head, *perfect except eyes.*
505–19 Homalonotus delphinocephalus, tail impression.
505–20 Rhynchonella (Stenochisma) neglecta.
505–21 Rhynchonella neglecta.
505–23 Dalmanites limulurus, head, *good.*
Homalonotus delphinocephalus, head fragment.
505–24 lithological specimen.
505–25 Platystoma niagarense.
505–26 Dalmanites limulurus, tail fragments.
505–27 Rhynchonella neglecta.
505–28 lithological specimen.
505–29*a* Orthis elegantula, impressions.
505–29*b* Dalmanites limulurus.
506–30 Dalmanites limulurus, tail fragment, with
Rhynchonella neglecta, with
Spirifera staminea, and
Streptorhynchus subplana.
505–31 Homalonotus delphinocephalus, tail, medium size, fragment.
505–32 Rhynchonella stricklandi? (*perhaps new species.*)
505–33 Homalonotus delphinocephalus, tail fragment.
Rhynchonella stricklandi, fragment.
505–34 piece of conglomerate.
505–35 piece of iron ore.
505–36 Orthis elegantula.
505–37 Orthis elegantula (four specimens).
505–38 Orthis elegantula (two specimens).
505–39 Rhynchonella stricklandi.
505–40 obscure.
505–41 Nucula sinuosa, *new species*, Simpson.
505–42 Nucula sinuosa, n. s.
*505–43 Orthis subcircula, *new species.* Simpson.
505–44 Streptorhynchus tenuis.
505–45 Streptorhynchus tenuis.

Bell's Mills, Blair county, collections of C. E. Hall, September, 1875, two miles southwest of the village, from *Clinton lime shale, Va.*

506–1	Atrypa reticularis, with Strophodonta striata.
506–2	Atrypa reticularis, with Streptorhynchus subplana.
506–2*b*	Strophodonta striata.
506–2*c*	Nucleospira, two casts.
506–3	Strophodonta striata.
506–4	Atrypa reticularis, with Strophomena rhomboidalis.
506–5	Atrypa intermedia.
506–6†	lithological specimen.
506–7	Orthis elegantula.
506–8	Orthis flabellum.
506–9	Atrypa neglecta, with
*	**Rhynchonella lævis,** *new species.* Simpson. Orthis elegantula.
506–10	Orthis hybrida, with Strophomena rhomboidalis.
506–11	Spirifera ——?
506–12	Strophodonta depressa.
506–13	Strophodonta striata.
506–13*b*	Nucleospira ——?
506–14	Orthis hybrida.
506–15	Brachiopoda ——?
506–16	Orthis hybrida.
506–17	Orthis hybrida.
506–18	Dalmanites limulurus.
506–19	Atrypa reticularis, with Orthis hybrida, and Streptorhynchus subplana.
506–20	Atrypa reticularis, with Strophomena rhomboidalis.
506–21	Atrypa reticularis.
506–22	Brachiopoda, several fragments of.
506–23	Atrypa reticularis.
506–24	Dalmanites limulurus, tail, with Strophomena rhomboidalis.

506–25 Atrypa reticularis.
506–26 Streptorhynchus subplana.
506–27 Streptorhynchus subplana.
506–28 Atrypa intermedia.
506–29 fragments.
506–30 piece of iron ore.
506–31 Atrypa reticularis.
506–32 Illænus —— ? impression.
506–33 Atrypa reticularis.
506–34 Atrypa reticularis.

Matilda furnace, Mifflin county, collections of W. A. Fellows and C. E. Hall, 1875, from *Clinton lime shale, Va.*

507–1 Trilobite, crushed impression.
507–2 Atrypa reticularis.
507–3 Atrypa reticularis.
507–4 Rhynchonella stricklandi.
507–5 Actinopteria emacerata.
507–6 Atrypa reticularis, both valves.
507–7 Strophodonta striata.
507–8 Strophodonta striata.
507–9 Atrypa reticularis, impression of fragment.
507–10 Dalmanites limulurus, fragment of tail.
507–11 Atrypa reticularis, dorsal valve, with
Dalmanites limulurus, and
Strophomena rhomboidalis.
507–12 Actinopteria emacerata.
507–13 Strophodonta striata.
507–14 Dalmanites limulurus, body and tail.
507–15 Atrypa nodostriata.
507–16 Atrypa reticularis, fragments.
507–17 Lyrodesma poststriatum.
507–18 obscure.
507–19 Strophodonta striata.
507–20 Platystoma —— ?
507–21 Strophodonta profunda.
507–22 Atrypa reticularis, crushed specimen.
507–23 Trilobite fragment.
507–24 Strophodonta striata.

507–25 Avicula rhomboidea.
507–26 Nucula subtrigona, *new species*. Simpson. See 508-15.
507–26*b* Dalmanites limulurus.
507–27 Lamellibranchiata.

Orbisonia, Huntingdon county, collected by C. E. Hall and W. A. Fellows, 1875, north of Blacklog creek, from *Clinton lime shale, Va.*

508–1 Strophomena rhomboidalis, dorsal valve and impression.
508–2 Strophomena rhomboidalis.
508–3 Beyrichia lata, numerous specimens.
508–4 Tellinomya (Palæoneilo) cuneata, *new species*. Sim. See 501-200, 500-201.
508–5 Tellinomya (Palæoneilo) cuneata, *new species*.
Beyrichia lata.
508–6 obscure.
508–7 Plants, remains of.
508–8 Gasteropod, fragment.
508–9 Homalonotus delphinocephalus, tail.
508–10 Plants, remains of.
508–11 Dalmanites limulurus.
508–12 Homalonotus delphinocephalus, tail.
508–13 Dalmanites limulurus, fragment of cheek.
508–14 Beyrichia lata.
508–15 Nucula subtrigona, *new species*. Simpson.
Tellinomya (Palæoneilo) cuneata, *new species*. Simpson.
Orthonota (Orthodesma) curta. See Hall Pal. Vol. 2, pl. 27.
508–16 Modiolopsis subalata. Nucula subtrigona, n. sp. Sim.
508–17 Rhynchonella (Stenochisma) neglecta.
508–18 Strophodonta striata.
508–19 Beyrichia lata.
508–20 undetermined.
508–21 2 Plant remains.
508–22 undetermined.
508–23 Beyrichia lata, numerous.

508–24 Beyrichia lata.
508–25 Plant remains—obscure.
508–26 Beyrichia lata.
508–27 Beyrichia lata.
508–28 Beyrichia lata, small piece.
508–29 Beyrichia lata.
508–30 Plant, obscure.
508–31 Beyrichia lata, numerous good specimens.

Orbisonia, Huntingdon county, collected by W. A. Fellows and C. E. Hall, 1875, from the North side of Blacklog creek, 10 to 12 feet below ore opening, from *Clinton lime shale, V a.*

509–1 Crinoid stems and impressions.

About 140 feet above the base of the Clinton lime shale, collections made by W. A. Fellows and C. E. Hall, 1875, from Clinton lime shale, V a.

510–1 Beyrichia lata, numerous impressions.
510–2 Beyrichia lata, decomposed impressions.
510–3 Beyrichia lata, impressions.
510–4 obscure.
510–5 Beyrichia lata, decomposed impressions.
510–6 Beyrichia lata.

About 80 feet above the base of the Clinton lime shale, collected by W. A. Fellows and C. E. Hall, 1875, in *Clinton lime shale, V a.*

511–1 Beyrichia lata.

Sixty feet above base of the Clinton lime shale, collected by W. A. Fellows and C. E. Hall, 1875, in *Clinton lime shale, V a.*

512–1 obscure.
512–2 Beyrichia lata.
512–3 Beyrichia lata, numerous specimens.

Near Hollidaysburg, Blair county, collections made by R. H. Sanders, 1875, from the fossil ore above the limestone at Jos. Patton's limestone ore bank, in *Clinton lime shale, Va.*

513–1 Leptocoelia hemispherica.
513–2 Rhynchonella —— ?
513–3 Rhynchonella —— ?
513–4 Rhynchonella —— ?
513–5 Rhynchonella —— ?
513–6 obscure fragments.
513–7 obscure.
513–8 Leptocoelia hemispherica.

Cambria Iron Co.'s slope, 1 mile northwest of Frankstown, Blair county, collections made by R. H. Sanders, 1875, from *Clinton lime shale, Va.*

514–1 Brachiopoda, undetermined.
514–2 Leptocoelia hemispherica.

From roof slate of Frankstown bed, collections by R. H. Sanders, 1875, in *Clinton lime shale. Va.*

515–1 obscure.
515–2 Leptocoelia hemispherica ?
515–3 Leptocoelia hemispherica.

Orbisonia, Huntingdon county, collections made by A. Hale and C. E. Hall, 1875, 1½ miles south of Rock Hill furnace, from *Lower Helderberg, VI.*

601–1 Cladopora —— ? probably a new species.
601–2 Favosites helderbergiæ.
601–3 Favosites helderbergiæ.
601–4–4 Atrypa reticularis.
601–5–8 Atrypa reticularis.
601–6–21 Atrypa reticularis.
601–7–4 Atrypa reticularis.
601–8–5 Atrypa reticularis.

601–9–15 Atrypa reticularis.
601–10–29 Atrypa reticularis.
601–11–4 Pentamerus pseudogaleatus? very poor.
601–12–3 Camarium typum.
601–13–4 Camarium typum, fragments.
601–14–2 Syringpora —— ? fragments too small to identify.
601–15 Aulopora schohariæ.
601–16 Atrypa reticularis, fragments.
601–17 Atrypa reticularis.
601–18 Orthis perelegans, young individual.
601–19 Trematospira globosa (six examples).
601–20 Astylospongia inornata (ten examples).
601–21 Atrypa reticularis.
601–22 Merista lævis (seven examples).
601–23 Alveolites explanatus? (four fragments).
601–24 Alveolites niagarensis, Rominger. (Doubtful identification; the tubes have the appearance of some forms of sponges. (Simpson.)
601–25 Astylospongia inornata (four examples).
601–26 Favosites canadensis?
601–27 Alveolites explanatus, incrusting a Chætetes (?).
601–28 Favosites helderbergiæ.
601–29 Astylospongia inornata.
601–30 **Acervularia communis,** *new species* (Simpson & Hall, Dec. 1888).
601–30 Diphyphyllum?
601–31 Alveolites explanatus (two examples); with
Cladopora ——— a branching species, with cells arranged in regular order, eight rows in a branch (two examples).
601–32 Heliophyllum caniculum? (seven examples).
601–33 Favosites helderbergiæ, mostly conical or spherical (eight examples).
601–34 Alveolites ——— ? with
Cladopora ——— ? like *Multipora* of the *Niagara formation, V b.*
601–35 Coralline fragments, numerous.
601–36 Sponges of undetermined genera and species (three examples).
601–37 Trematospira globosa (eleven examples).

Orbisonia, Huntingdon County, collections made by C. E. Hall, in 1875, in the field back of the sand quarry, near Rock Hill furnace, from *Lower Helderberg limestone strata, VI.*

602–1 Merista typum.
602–2 Pentamerus galeatus.
602–3 Rhynchonella altiplicata (four fragments).

Orbisonia, Huntingdon county, collections made by A. Hale and C. E. Hall, in 1875, on the slope of Sandy Ridge, back of the town, from *Lower Helderberg limestone strata, VI.*

603–1 Merista (Meristella) subquadrata (twenty seven examples).
603–2 Rhynchonella formosa (three examples).
603–3 Orthis perelegans (four examples).

Hazardville, Carbon county, collections made by W. A. Fellows and F. A. Genth, Jr., in 1875, at Mansing's quarry, from *Lower Helderberg limestone beds, VI.*

604–1 Modiolopsis dubius.
604–2 Chætetes, obscure.
604–3 fragments of several species of brachiopods.
604–4 **Chonetes punctatus,** *new species.* Simpson, December, 1888.
604–5 Chonetes punctatus, new species.
604–6 Orthis punctostriata.
604–7 Orthis eminens (three examples).
604–8 fragments of crushed brachiopods.

Orbisonia, Huntingdon county, collections made by C. E Hall and W. A. Fellows, in 1875, on the slope of Sandy Ridge, near the town, from *Lower Helderberg limestone beds, VI.*

605–1 Pentamerus galeatus, interiors.
605–2 Camarium typum (twelve fragments).
605–3 Diphyphyllum———?

Bushkill, Pike county, collections made by W. A. Fellows, June, 1876, from the river slope of the Hogback, near the road

to Shawnee, at Walpack Bend of the Delaware river, in *Lower Helderberg limestone beds, VI.*

606–1 Favosites helderbergiæ.
606–2 Modiolopsis dubius.
606–3 a variety of poorly preserved shells.
606–4 Favosites helderbergiæ (seven examples).
606–5 obscure.
606–6 Atrypa reticularis.
606–7 Atrypa reticularis.
606–8 Atrypa reticularis.
606–9 Atrypa reticularis, with poor fragments of other species.
706–10 Spirifera macropleura.
606–11 a cast of genus and species unknown.
606–12 Rhynchonella formosa (three examples; very little doubt of the species).
606–13 Dalmania pleuropteryx (three tails of this trilobite).
606–14 Atrypa reticularis.
606–15 very poor fragments of the same.

Tyrone City, Blair county, collections made by C. E. Hall and W. A. Fellows, in August, 1876, at the quarry north of the city, from *Lower Helderberg limestone beds, VI.*

607–1 Stromatopora concentrica (large specimen).
607–2 obscure fragments of Crinoid stems and bryozoa.
607–3 obscure.
607–4 obscure.
607–5 **Cladopora rectilineata** ? *new species*, Simpson, Proc. A. P. S. Phil., December, 1888.
607–6 obscure.
607–7 Atrypa reticularis, obscure.
607–8 obscure fragments of bryozoa.
Spirifera cycloptera ?
607–9 Cladopora rectilineata, n. s. (See 607–5).

Bushkill, Pike county, collections made by C. E. Hall and W. A. Fellows, 1876, on the north slope of the Hogback, below the mouth of the Big Bushkill creek, from *Lower Helderberg limestone beds, VI.*

608–1 Strophomena woolworthana (eighteen examples; examined by J. Hall, 1888).
608–2 Strophomena woolworthana (two).
608–3 Strophomena rugosa (three).
608–4 Favosites helderbergiæ.
608–5 a lithological specimen.
608–6 Spirifera macropleura (J. H.).
608–7 Spirifera per lamellosa (J. H.).
608–8 Merista (Meristella) lævis (J. H.).
Pentamerus galeatus.
608–9 Strophomena woolworthana (J. H.).
608–10 Orthis oblata (J. H.) with
Spirifera per lamellosa (J. H.).
608–26 Tentaculites, impressions.

Shawnee, Monroe county, collections made by Hall & Fellows, on the Delaware river below the village, from *Lower Helderberg beds, VI.*

609–1 Pentamerus galeatus (five specimens; two large blocks containing many individuals; and three smaller blocks).
609–2 poor fragments of brachiopoda and bryozoa.

Barre township, Huntingdon county, collections made by C. E Billin, November, 1876, on A. B. Miller's farm, Warrior's ridge, from *Lower Helderberg limestone beds, VI.*

610–1 Atrypa reticularis.
610–2 Triplesia extans (eleven examples).
610–3 sections of Bryozoa; no surfaces.
610–4 Trematopora —— ?
610–5*c* Callotrypa heteropora (a New York fossil bryozoon) or one closely resembling it.
610–6 obscure bryozoa.
610–7 Pentamerus galeatus (two).
610–8 Cladopora cespitosa (of the *Niagara*) or one resembling it.
610–9 Diphyphyllum —— ? a very large specimen.
610–10 Triplesia extans (poor fragments).

610–11 Callotrypa heteropora (?)
601–12 Spirifera, obscure.

Orbisonia, Huntingdon county, collections made by C. E. Hall, April, 1875, at Sandy Ridge sand quarry, south of Black-log creek, from the *Oriskany sandstone*, *VII.*

701–1 Atrypa reticularis (seven examples).
701–2 Orthis hipparionyx (six).
701–3 Spirifera arrecta.
701–4 Spirifera arrecta.
701–5 Spirifera arenosa (two).
701–6 Rensselæria ovoides (twelve).
701–7 Rensselæria ovoides (seven).
701–8 Orthis hypparionyx (three).
701–9 obscure.
701–10 Spirifera arenosa (three).
701–11 Spirifera arenosa.
701–12 Spirifera arrecta.
701–13 Rensselæria ovoides.
701–14 various shells (seven).

Orbisonia, Huntingdon county, collections made by C. A. Ashburner and C. E. Hall, April, 1875, at the south end of Royer's Ridge, in the *Oriskany lime-sand beds*, *VII.*

702–1 undetermined brachiopod interiors.
702–2 Megambonia lamellosa (two fragments).
702–3 Strophomena rugosa, obscure.
702–4 Spirifera arenosa (four).
702–5 Renselæria ovoides (two; one very poor).
702–6 Spirifera arrecta.
702–7 Platystoma subangulata (closely resembling Hall's fig. 3, plate 55, Pal. N. Y. Vol. 3).
702–8 Cyrtolites expansus (two).
702–9 Spirifera arenosa.
702–10 ten fragments.
702–11 Rhynchonella (Stenochisma) multistriata;—with Pentamerus ——.
702–12 Avicula textilis, var. arenaria (impression) and Dalmania micrurus.

702–13 obscure lamellibranchs.
702–14 Avicula textilis, var. arenaria? (Hall Pal. N. Y. Vol. 3, pl. 110 fig. 2).
702–15 Bellerophon bilobatus, and
Spirifera arenosa (several on a large slab).
702–16 Pentamerus galeatus.
701–17 Spirifera arenosa (large).
702–18 Spirifera (large block with several fragments).
702–19 Spirifera.
702–20 Spirifera, with
Rensselæria ovoi les.

Orbisonia, Huntingdon county, collections made by C. E. Hall, April, 1875, on Royer's Ridge, north of the road crossing at Orbisonia, from the *Oriskany sandstone VII.*

703–1 Orthis hipparionyx (five examples).
703–2 Spirifera arenosa.
703–3 Rensselæria ovoides (seven).
703–4 Orthis hipporionyx.
703–5 Spirifera arenosa (three).
703–6 Spirifera arenosa.
703–7 Spirifera arrecta, and
Spirifera ———? (a cast).
703–8 Platyceras ———?
703–9 Orthis hipparionyx, and
Rensselæria ovoides.
703–10 Rensselæria, with markings not shown in the other casts.
703–11 Rensselæria (three examples).
703–12 Platystoma ventricosa.
703–13 Cyrtolites expansus.
703–14 Platyceras plicatum (two).

Marshall's Falls, Monroe county, collections made by H. M. Chance, November 1874, one and a half miles north of Craig's Meadow, from *Hamilton strata, VIII c.*

801–1 Spirifera medialis (verified by J. Hall).
801–2 Spirifera granulifera (J. H.).
801–3 Spirifera granulifera (J. H.).
801–4 Atrypa reticularis (impression).

801–5 Spirifera mesocostalis.
801–6 Spirifera arenosa.
801–7 Tropidoleptus carinatus, and
Bellerophon leda?
801–8 Atrypa reticularis.
801–9 Chonetes scitula.
801–10 Tæniopora exiguua (Nicholson; but see better description in Hall, Pal. N. Y. Vol. 6).
801–11 Reptaria stolonifera, *incrusting Orthoceras constrictum*
801–12 Fenestella ——— ? impression.
801–13 Fenestella ——— ? impression of cellular and non-cellular face.
801–14 Modiomorpha concentrica, with Fenestella ——— ? obscure.
801–15 Fenestella very obscure.
801–16 Platyceras carinatum, with Platyceras ——— ? (J. H.).
801–17 Platyceras cymbium.
801–18 Platyceras carinatum.
801–19 Aviculopecten princeps (J. H.) and
Aviculopecten ——— ?
801–20 Actinopteria subdecussata.
801–21 Cimitaria recurva.
801–22 a concrétion (J. H.).
801–23 Pleurotomaria sulcomarginata, (J. H.) two examples.
801–24 Phacops rana (four).
801–25 Dalmanites (Cryphæus) boothii (J. H.) two specimens.
801–26 Phacops.
801–27 Modiomorpha concentrica.
801–28 Orthoceras ohioense.

Orbisonia, Huntingdon county, collections made by Ashburner and Hall, April, 1875, on Aughwick creek, just below the bridge at Saddleback gap, from *Hamilton strata, VIII c.*

802–1 Worm tracks.
802–2 Chonetes coronata (J. H.).
802–3 Chonetes scitula? with
Tropidoleptus carinatus (J. H.).

Orbisonia, Huntingdon county, Saddleback ridge, collections of C. E. Hall, April, 1875, from *Hamilton strata, VIII c.*

803–1 Tentaculites spiculus; a large slab covered with them.
803–2 Tentaculites spiculus; a large slab covered with them.
803–3 Tentaculites spiculus; a large slab covered with them.
803–4 Tentaculites spiculus; a large slab covered with them.
803–5 Tentaculites spiculus; a large slab covered with them.
803–6 Pterinea flabella; a large slab covered with them.
803–7 Pterinea flabella.
803–8 Pterinea flabella, internal mold of right valve.
803–9 Pterinea flabella, with
Chonetes scitula; many individuals.
803–10 Chonetes scitula, with
Spirifera disjuncta (verified by J. H).
803–11 Chonetes syrtalis (verified by J. H.), with
Tentaculites spiculus (cast) and
Chonetes scitula?
803–12 Chonetes scitula (several, on slabs).
803–13 Chonetes coronata (impression), with
fragments of brachiopods (two specimens).
803–14 Terataspis grandis (partial impression; verified by J. Hall); also, another specimen, undetermined.
803–15 Chonetes scitula (doubtful).
803–16 Chonetes scitula (verified by J. H).
803–17 Pholidops arenaria (doubtful).
803–18 Pterinea flabella, fragment.
803–19 Pterinea flabella, impression, with
Chonetes scitula.
803–21 Pterinea flabella, impression of fragment.
803–22 Spirifera granulifera (verified by J. H.).
803–23 Pterinea flabella, fragments.
803–24 Spirifera mesacostalis (poor); fimbriata.
803–25 Chonetes syrtalis (J. H.).
803–27 Grammysia (species not discoverable).

Marshall's creek, Monroe county, collections of W. A. Fellows and F. A. Genth, Jr., July 1875, from *Hamilton strata, VIII c.*

804–1 Paracyclas elliptica.
804–2 Paracyclas lirata.
804–3 Paracyclas lirata.
804–4 Tellinomya subemarginata (J. H.).
804–5 Grammysia (species).
804–6 Grammysia (Sphenomya) cuneata.
804–7 Paracyclas lirata.
804–8 Paracyclas lirata.
804–9 Palæoneilo (species).
804–10 Spirifera fimbriata (verified by J. Hall).
804–11 Crinoid impressions.
804–13 Spirifera fimbriata (card for two trays).
804–14 Discina ampla.
804–15 Spirifera fimbriata.
804–16 Discina media.
804–17 Spirifera mesocostalis.
804–18 Spirifera fimbriata.
804–19 Spirifera fimbriata (seven individuals verified by J. Hall).
804–20 Crinoid stems (poor); with
Chonetes laticosta; and
Orthoceras constrictum.
804–21 Telenomya submarginata.
804–22 Spirifera fimbriata (verified by J. H.).
804–23 Chonetes mucronata.
804–24 Strictopora gilberti.
804–25 Palæoneilo fecunda (doubtful).
804–26 Chonetes mucronata.
804–27 Palæoneilo (species).
804–28 Streptelasma (species), J. H., and
a cyathophylloid coral.
804–29 Chonetes mucronatus (two individuals).
804–30 Discina ampla.
804–31 Strophomena woolworthana (J. H.), and
Strophodonta demissa.
804–32 Fenestella, cast.
804–33 Coleolus aciculus.
804–34 a cyathophylloid coral.
804–35 Pterinea flabella, fragment (very poor).
804–36 Discina (species indistinct).

804–37 Paracylus lirata.
804–38 Crinoid stem impression.
804–39 Chonetes mucronata.
804–40 Chonetes mucronata.
804–41 Platyceras nodosum.
804–42 Dalmanites (Cryphæus) boothii, head and tail.
804–43 Spirifera mesocostalis.
804–44 Fenestella, impression, poor.
804–45 Fenestella (not named).
804–46 Fistulipora (obscure).
804–47 Lingula maida.
804–48 (wanting).
804–49 Chonetes mucronata.
804–50 Spirifera mesocostalis.
804–51 Chonetes mucronata.
804–52 Orthoceras cælamen.
804–53 Grammysia (crushed).
504–54 Chonetes mucronata, impression (poor).
804–55 Crinoid stem, impression.
804–56 Paracyclas lirata.
804–57 Tellinopsis subemarginata.
804–58 obscure fragments (three specimens).
804–59 Spirifera mesocostalis, impression.
804–60 Spirifera mesocostalis.
804–61 Fenestella (thirteen specimens, nearly all of one species, but in such a condition that they cannot be identified with certainty. G. B. Simpson).
804–62 obscure.
804–63 Orthoceras cælamen.
804–64 Tellinopsis subemarginata (verified).
804–65 Palæoneilo brevis.
804–66 Paracyclas lirata (with valves, crushed).
804–67 Pterinea flabella, fragment (poor).
804–68 obscure lamellibranchs.
804–69 Spirifera mesocostalis (three).
804–70 Chonetes mucronata (two).
804–71 Fenestella ——? (probably unnamed, but these casts are too poor for good determination).
804–72 obscure fragments.
804–73 Dalmanites (Cryphæus) boothii (four examples).

804–74 Dalmanites (four tails).
804–75 Dalmanites (one body).
804–76 obscure fossils.
804–77 Pröetus rowi.
804–78 Phacops rana; tail (pygidium).
804–79 Phacops rana (six heads).
804–80 Phacops rana (nine bodies).
804–81 Spirifera mesocostalis.
804–82 Nuculites oblongata (verified by J. Hall).
804–83 Spirifera fimbriata (verified by J. Hall).
804–84 Phacops rana, head.
804–85 Fenestella, obscure impression.
804–86 Chonetes mucronata; and
Bellerophon patulus.
804–87 Spirifera mesocostalis.
804–88 obscure fragments.
lithological specimen.
804–90 Streptelasma——? and
a small cyathophylloid coral fragment.
804–91 Ambocœlia umbonata.
804–92 Strophodonta perplana (young one).
804–93 Ambocœlia umbonata (two).
804–94 Dalmanites calliteles (J. Hall); with
Pröetus ——? and
an unknown form (*See figure on card*).
804–95 a cyathophylloid coral, indistinct.
804–96 Conocardium cuneus? (J. H.).
804–97 obscure.
804–98 Phacops rana.
804–99 Dalmanites calliteles (J. H.).
804–100 obscure.
804–101 Stictopora gilberti.
804–102 Some very poor bryozoan impressions.
804–103 Fish scale.
804–104 Paracyclas lirata (verified by J. H.).
804–105 a small poor fragment of a trilobite.
804–106 Bellerophon triliratus; and
Strophodonta perplana.
804–107 Strophodonta perplana (J. H.).
804–201 Actinopteria boydii (J. H.).

Bell's Mills, Blair county, collections by C. E. Hall, 1875, from *Hamilton shale, VIII c.*

805–1 Heliophyllum halli.
805–2 Terebratula harmonia (verified by J. Hall).
805–3 Fenestella —— ? not named (impression).
805–4 a cyathophylloid coral (too obscure).
805–5 Atrypa reticularis.
805–6 Stictopora gilberti (poor impression).
805–7 Athyris spiriferoides.
805–8 Strophodonta perplana (J. H.).
805–9 Crinoid stems (poor).
805–10 obscure.
805–11 Stictopora subcarinata.
805–12 Goniophora hamiltonensis (both valves, vertically compressed).
805–13 Fenestella planiramata ?
805–14 Spirifera mucronata.
805–15 Pentamerella micula.
805–16 Fenestella —— ? not named (poor cast).
805–17 Stictopora subcarinata (poor impression).
805–18 a lamellibranch shell (obscure).
805–19 Fenestella —— ? not named (cast).
805–20 Strophodonta perplana (J. H.).
805–21 Fenestella —— ? not named (cast).
805–22 Fenestella —— ? not named (fragments).
805–23 fragment of a crinoid stem.
805–24 Ambocœlia præumbona (verified by J. Hall).
805–25 Spirifera mucronata.
805–26 Orthoceras —— ? (small fragment).
805–27 a poor fragment of some trilobite.
805–28 Orthoceras nuntium (J. H.); with Tropidoleptus carinatus (two, J. H.).
805–29 Athyris spiriferoides (J. H.).
805–30 seven fragments.
805–31 Chonetes coronatus.
805–32 Phacops rana.
805–33 Chonetes coronatus (J. H.).
805–34 a cyathophylloid, obscure.
805–35 a small fragment.
805–36 fragments.

Marshall's creek, Monroe county, Levi Detrich's farm ½ mile north of Marshall's falls, collections by W. A. Fellows and F. A. Genth, Jr., 1875, from *Hamilton shale VIII c.*

806–1 Strophodonta concava.
806–2 Spirifera marcyi (verified by J. Hall).
806–3 Heliophyllum halli (cast of calyx).
806–4 Atrypa reticularis (poor).
806–5 Spirifera fimbriata (impression of bit).
806–6 Spirifera granulifera (cast of part, J. H.).
806–7 Atrypa reticularis (crushed, J. H.).
806–8 Ambocœlia umbonata; with
Spirifera —— ? fragments.
806–9 Athyris spiriferoides (J. H.).
806–10 Spirifera fimbriata (on a block containing also fragments of
Spirifera mucronata.
806–11 obscure.
806–12 obscure.
806–13 obscure.
806–14 ———
806–15 Palæoneilo plana (J. H.).

Marshall's creek, Monroe county, George Kintner's farm, one mile south-west of Marshall's Falls, collections by W. A. Fellows and F. A. Genth, jr., 1875, from *Hamilton strata, VIII c.*

807–1 Heliophyllum halli (imp. of cup).
807–2 Pterinea flabella (fragment).
807–3 Fenestella —— ? unnamed (casts, fragments).
807–4 Spirifera disjuncta.
807–5 Chonetes mucronata (two).
807–6 a lithological specimen.
807–7 Pterinea flabella.
807–8 Crinoid, stem, end, (*beautiful*).
808–9 Crinoid stem impression, (poor).
807–10 Cyathophyllum —— ? (obscure cup).
807–11 Productella lachrymosa (verified by J. H.).
807–12 Platyceras erectum (verified by J. H.).
807–13 Pleurotomaria sulcomarginata.
807–14 obscure.

807–15 Fenestella —— ? unnamed (cast of frond).
807–16 Paracyclas lirata (*good example*).
807–17 Crinoid stem impression, and a few plates.
807–18 Spirifera disjuncta (cast).
807–19 Spirifera disjuncta.
807–20 Pterinea flabella (impression).
807–21 Nautilus liratus, var. juvenis.
807–22 Crinoid stems (poor fragments).
807–23 Aviculopecten princeps.
807–24 Spirifera fimbriata (J. H.).
807–25 Spirifera mesocostalis.
807–26 Strophodonta perplana, var. nervosa (J. H) Spirifera disjuncta (on the same specimen).
807–27 Spirifera fimbriata (J. H.).
807–28 Tæniopora exigua (a part of it from very near the base of the fossil).
807–29 a poor fragment of some trilobite.
807–30 Palæoneilo fecunda.
807–31 Phacops rana (very poor impression).
807–32 Spirifera fimbriata (J. H.).
807–33 Phacops —— ? tail (pygidium).
807–34 Phacops rana, head (cast).
807–35 Crinoid stem, end.
807–36 Spirifera mucronata (cast and impression).
807–37 Spirifera mucronata.
807–38 Platyceras —— ? (J. H.) with
Discina —— ? both valves convex.
807–39 Spirifera disjuncta.
807–40 Ambocœlia umbonata, var. gregaria.
807–41 Phacops rana, head (cast).
807–42 Fenestella —— ? not named (the non-cellular face of it exhibited).
807–43 Tropidoleptus carinatus. (J. H.).
807–44 Tropidoleptus carinatus (two examples, J. H.).
807–45 Tropidoleptus carinatus.
807–46 Ambocœlia umbonata; with
Crinoid stem fragments (poor).
807–47 a lamellibranch shell.
807–48 Spirifera granulifera (J. H.).
807–49 ————.

807–50 Spirifera mucronata.
807–51 Spirifera disjuncta.
807–52 Spirifera fimbriata? (impression, poor).
807–53 Crinoidal stems, casts, poor, mostly ends.
807–54 Atrypa reticularis.
807–55 Strophodonta demissa (J. H.).
807–56 Crinoid stem end. (*Very beautiful; see figure*).
807–57 Spirifera sculptilis (cast.—J. H.).
807–58 Spirifera mucronata.
807–59 Spirifera mucronata.
807–60 Spirifera fimbriata (J. H.)..
807–61 Spirifera mucronata (two very poor casts).
807–62 obscure fragments (three).
807–63 Crinoid stems (impressions, poor).

Dingman's Falls, Pike county, near Dingman's Ferry on the Delaware river, collections by W. A. Fellows, June, 1876, from *Hamilton strata, VIII c.*

808–1 Nucleospira concinna (verified by J. Hall).
808–2 Orthis vanuxemi. (J. H.).
808–3 Goniophora hamiltonensis.
808–4 Spirifera granulifera (J. H.).
808–5 Hyolithes (the base of one, J. H.).
808–6 Spirifera granulifera (J. H.).
808–7 many indeterminate fragments on one block.
808–8 Tellinopsis subemarginata.
808–9 Tellinopsis subemarginata.
808–10 Spirifera fimbriata (J. H.).
808–11 Crinoid stems, mostly discs, (poor).
808–12 Modiella pygmæa (Hall, V, 1, pl. 76); with
Nucula bella (J. H.); and
Nuculites oblongata (J. H.).
808–13 Modiella pygmæa, and
Nucula bella
808–14 Pleurotomaria arata (one whorl only); with
808–15 Pholadella parallela (J. H.).
808–16 Orthoceras ———? (small, poor fragments).
808–17 Michilinea (J. H.).
808–18 Orthoceras crotalum (J. H.).

808–19 Orthoceras conscriptum.
808–21 Lepidodendron gaspianum (J. H.).
808–22 Ambocœlia umbonata, var. gregaria.
808–23 Paracyclas lirata (crushed).
808–24 Orthis vanuxemi (J. H.).
808–25 Pleurotomaria sulcomarginata (J. H.).
808–26 Actinopteria boydii. (J. H.). two examples on a large partially decomposed block, containing many obscure fragments.
808–27 Homalonotus ——— ? very obscure.
808–48 Spirifera mesocostalis (three).
808–202 Leiopteria dekayi (J. H.).

Port Jervis, Orange county, N. Y., collections by C. E. Hall and W. A. Fellows, 1876, along the Delaware and Hudson canal, above the town, from *Hamilton strata, VIII c.*

809–1 Orthis tioga.
809–2 obscure.
809–3 Spirifera granulifera (J. H.).
809–4 Spirifera disjuncta.
809–5 Orthis tioga (two).
809–6 Leptodesma robustum (?) (J. H.).
809–7 Nucleospira concinna (J. H.).
809–8 Orthis leucosia (J. H.).
809–9 Orthis leucosia (J. H.).
809–10 Nucleospira concinna.
809–11 Athyris angelica.
809–100 Leiopteria dekayi.

Hogback, Monroe county, collections by W. A. Fellows, June, 1876, from the south slope of the ridge, on the road to Shawnee, by the way of DeWitt's from the *lower beds* of the *Upper Helderberg formation, VIII a.*

810–1 Leptocœlia —— ? a rare form.
810–2 Chonetes coronatus.
810–3 Spirifera fimbriata (J. H.).
810–4 Leptocœlia —— ? a rare form.

810–5 Rhynchonella (Leptocœlia?) three examples.
810–12 Spirifera fimbriata (J. H.).

Lawrenceville, Tioga county, collections by A. Sherwood, June, 1875, from the *Chemung*, *VIII g*.

850–1 Spirifera disjuncta (thirteen examples).
850–2 Spirifera disjuncta (numerous shells and casts).
Athyris ——?
Atrypa? casts of a large form.
850–3 Atrypa? casts of a large form.
Spirifera disjuncta.
850–4*a* Spirifera disjuncta, cast (J. H.).
850–4*b* Modiomorpha subalatus, var. chemungensis (J. H.).
850–4 Atrypa reticularis? (cast of interior).
Spathella typica?
Pterinea flabella (impression).
850–7 Strophodonta cayuta.
Strophodonta inæquistriata (mostly casts of interior, showing muscular scars.)
850–8 Strophodonta inæquistriata (mostly casts of interior, showing muscular scars).
Strophodonta cayuta (J. H.).
850–9 Strophodonta inæquistriata; many individuals on a slab; both valves, and casts and impressions of both valves).
850–10 Strophodonta inæquistriata (with fragments of other fossils), and
Strophodonta cayuta (J. H.); also
Pterinea flabella (poor specimen).
850–11 Strophodonta inæquistriata; twenty or thirty individuals one block.
850–12 Strophodonta cayuta (J. H.).
850–13 Strophodonta inæquistriata; with
Spirifera disjuncta.
850–14 Atrypa hystrix (*three fair specimens.* J. H.).
850–15 Atrypa hystrix (J. H.).
850–16 Lamellibranchs of two species in fragments.
850–17 Strophomena concava (cast).

850–18 Leptodesma phaon (J. H.), together with
Leptodesma naviforme (J. H.);
Goniophora chemungensis; and
Spirifera disjuncta.
850–19 Mytilops metella (J. H.).
850–20 Spirifera disjuncta.
850–21 Spirifera disjuncta.
850–22 Sprifera disjuncta (impressions).
850–23 Strophodonta cayuta (casts; and fragments of other fossils).
850–24 Orthoceras ———? interior, obscure.
850–25 Spirifera disjuncta; *many on one large slab.*
850–26 Spirifera disjuncta, with
Spathella typica.
850–27 Strophodonta inæquistriata (hinge line an inch long).
850–28 Strophodonta cayuta (dorsal and ventral valves, impressions and casts).
850–29 Byssopteria radiata.
850–30 Atrypa hystrix (J. H.); with
Bellerophon triliratus.
850–31 Spirifera disjuncta. A large slab with numerous examples; casts; hinge line very long (See 853–2).

Elk run, Tioga county, two miles west of Gaines, from 20 to 40 rods above the bridge over Pine creek near the mouth of Elk run, collections by A. Sherwood, July, 1875, from the *Chemung VIII g.*

851–1 Lamellibranch shells, obscure.

Covington, Tioga county, Pa., collections by A. Sherwood, July, 1875, from *Upper Chemung* strata, *VIII g.*

852–1 Productella arctirostrata (see Hall, Pal. N. Y. IV, plate 26, fig. 22, 23, with sinus much less distinct than in 855–11)—also
Grammysia elliptica (*in good condition* and a little beyond medium size).
852–2 Grammysia elliptica (two poor specimens); and
Productella lachrymosa (about half a valve shown).

852–3 Streptorhynchus chemungensis? (with striæ unusual).
852–4 Mytilarca occidentalis (Hall, Pal. N. Y., IV, plate 33 fig. 3) *in fair condition.*
852–5 Pterinopecten suborbicularis, only umbo and wings preserved.
852–6 Streptorhynchus chemungensis? (poor cast).
852–7 Leptodesma stephani (J. H.).
852–8 Fish remains.

Tioga, Tioga Co., Pa., collections of A. Sherwood, August 1875, from *Upper Chemung* strata *VIII g.*

853–1 A brachiopod undetermined.
853–2 Atrypa hystrix (verified by J. Hall); and Orthis impressa (J. H.).
853–3 Spirifera disjuncta (six individuals).
853–4 Strophomena rhomboidalis.
853–5 Leptodesma robustum (*in good condition.* J. H.).
853–6 Leptodesma demus (J. H.) several fragments.
853–7 Modiomorpha rigidula. *New species.* Simpson.
853–8 Productella hirsuta (J. H.).

Charleston township, Tioga County, Pa., collections of A. Sherwood, May and June 1875, from *Upper Chemung strata VIII g.*

854–1 Spirifera disjuncta (cast).
854–2 Spirifera disjuncta, a small rock piece covered with small casts.
854–3 Productella arctirostrata; with
Productella boydii (six casts, some fair, others poor).
854–4 Productella exanthemata (cast, in fair condition; compare *hirsuta* var.).
854–5 Productella exanthemata (poor casts).
854–6 Spirifera disjuncta (two poor casts).
854–7 Athyris angelica (J. H.) wider than usual.
854–8 Spirifera mesocostalis (poor casts of both valves).
854–9 Spirifera mesocostalis (fair casts).
854–10 Rhynchonella altiplicata (see Pal. N. Y. Vol. 3, pl. 33, f. 29).
854–11 Productella arctirostrata (one cast showing nodes another entirely smooth, showing muscular scars.

854–12 Spirifera granulifera (J. H.) cast showing scars.
854–13 Spirifera disjuncta (a poor specimen, partly exfoliated).
854–14 Streptorhynchus chemungensis (about three-quarters of the specimen).
854–15 Atrypa impressa (poor cast, showing scars).
854–16 Spirifera disjuncta (very poor cast).
854–17 Rhynchonella sappho (Pal. N. Y. Vol. 4, plate 55, f. 47), two individuals.
854–18 Athyris angelica (casts showing the different aspects of the species under different degrees of weathering).
854–19 Athyris angelica (cast showing muscular scars and pustulose surface).
854–20 Athyris angelica (four casts, preserving the form of the fossil and traces of the external surface markings.
854–21*a* Rhynchonella (Stenoschisma) sappho, (J. H.); with
854–21*b* Athyris angelica (three. J. H.); and
854–21*c* Spirifera mesacostalis.
854–22 Spirifera disjuncta (cast of small one); with
Athyris angelica (three individuals in different stages of preservation).
854–23 Productella lachrymosa (cast, showing strong pustules); and
Orthis impressa (cast, with muscular impressions; Hall's figures show the hinge a little straighter than this).
854–24 Spirifera disjuncta (cast; cardinal extremities short, angular).
854–25 Orthis impressa (cast showing scars. Same as 854 40).
854–26 Athyris angelica (small specimen in fair condition; and cast showing the scars and pustulose surface; with other obscure species of shells).
854–27 Spirifera disjuncta (casts of ventral and dorsal valves)
854–28 Spirifera mucronata (ventral casts).
854–29 Spirifera disjuncta (two dorsal casts, one with the scars).
854–30 Spirifera disjuncta (hinge ends much extended; shell partly exfoliated).
854–31 Athyris angelica (both valves, somewhat crushed).
854–32 Spirifera mesacostalis (dorsal cast).
854–33 Rhynchonella (Stenoschisma) duplicata (*in fair condition*, J. H.).
854–34 Rhynchonella sappho.

854–35 Athyris angelica (cast, with slight scars).
854–36 Edmondia phillipi (right valve *in fair condition*).
854–37 Athyris angelica (J. H., cast *showing breaks*).
854–38 Spirifera disjuncta (small one).
854–39 obscure.
854–40 Orthis impressa (J. H. Several specimens of both valves).
854–41 Orthis impressa (J. H., cast and scars).
854–42 Productella arctirostrata.
854–43 Orthis impressa=854–40 (three casts, with scars); and
Productella lachrymosa (casts showing pustular surface).
854–44 Productella lachrymosa (casts of varying forms showing pustular surface).
854–45 Orthis impressa=854-40 (casts; scars); and
Athyris angelica.
854–46 Productella arctirostrata (Pal. N. Y., Vol. 4, plate 26 f. 22).
854–47 Rhynchonella (Stenoschisma) contracta (Pal. N. Y., Vol. 4, pl. 55, f. 30 32).
854–48 Rhynchonella (St.) eximia?
854–49 Edmondia subovata (*good*).

Sullivan township, Tioga county, Pa., collections by A. Sherwood, July, 1875, from *Upper Chemung* strata, *VIII g.*

855–1 Streptorhynchus chemungensis, dorsal valve (*good*).
855–2 Streptorhynchus chemungensis, dorsal valve (*good*).
855–3 Grammysia elliptica (large specimen, nearly smooth).
855–4 Leptodesma lichas (verified by J. Hall, three specimens of medium size, each a little imperfect, but in *fair* to *good condition.*
855–5 Streptorhynchus chemungensis (Pal. N. Y., IV, 10 f. 8).
855–6 Grammysia elliptica (a little above medium size; somewhat crushed; smooth).
855–7 Orthis impressa = 850–40 (cast showing scars).
855–8 Grammysia elliptica (ordinary size; lower back part broken off; specimen in *fair condition*).

855–9 Streptorhynchus chemungensis (narrow, regularly rounded).
855–10 Productella exanthemata (pustules, or nodes, nearly obsolete).
855–11 Productella boydii? with a very distinct sinus (not figured in Pal. N. Y.).
855–12 Productella boydii? = 855–11; convex; distinct sinus; nodes few, elongate and sharp; and
Streptorhynchus chemungensis; broad, slightly convex; with slight sinus.
855–13 Streptorhynchus chemungensis (See Pal. N. Y., IV, plate 10, f. 10, 18).
855–14 Productella arctirostrata (J. H.); also
855–14*a* Productella boydii (J. H.), very convex; stronger sinus than any specimen figured; also
855–14*b* Productella exanthemata (J. H.).
855–15 Streptorhynchus chemungensis; one flat, the other convex, with a sinus along the middle.
855–16 Streptorhynchus chemungensis, rounded at the ends, with a sinus along the middle.
855–17 Streptorhynchus chemungensis (J. H.).
855–18 Productella exanthemata?
855–19 Orthis impressa = 854–40 (cast and scars).
855–20 Productella speciosa; with
Productella boydii; and
Grammysia elliptica (two *good* specimens).
855–21 Productella lachrymosa.
855–22 Orthus impressa = 854–40 (cast and scars).
855–23 Sphenotus contracta; very narrow.
855–24 Sphenotus chemungensis, *new species*, Simpson, Proc. A. P. S., Phil., Dec. 1888 (both valves; umbo broken off).
855–25 Leptodesma phaon (J. H.).
855–26 Lamellibranch concealed by stone.
855–27 Edmondia phillipi, left valve (J. H., *good*).
855–28 Leptodesma phaon (J. H., *good condition*).
855–29 Atrypa aspera? a very coarse specimen (*in good condition*).
855–30 Atrypa spinosa (J. H. It resembles 855–29; lower part broken off).

855–31 Productella = 855–11; convex, with distinct sinus.
855–32 Aviculopecten cancellatus (J. H.) *a fine specimen;* also
Leptodesma mortoni (*in fair condition*).
855–33 Aviculopecten cancellatus (J. H.) = 34,
Aviculopecten = 35, 36,
Productella.
855–34 Aviculopecten cancellatus (J. H. *good;*) and
855–34*b* Streptorhynchus chemungensis; small, flat.
855–35*a* Aviculopecten cancellatus (J. H.).
825–35*b* Aviculopecten = 33 (impression *from which a fair gutta percha cast could be made*).
855–35*c* Athyris angelica (cast).
855–35*d* Streptorhynchus chemungensis (J. H.) impression of dorsal valve; and a second flat specimen).
855–36*a* Productella arctirostrata; cast of dorsal interior; distinctly eared; with elevation along middle; also
855–36*b* Streptorhynchus chemungensis; dorsal valve; and cast with scars; also
855–36*c* Mytilarca——? perhaps occidentalis.
855–37 Productella = 855–11; convex deep sinus; pustules becoming lengthened at the front.
855–38 Productella boydii (J. H.).
855–39*a* Athyris angelica.
855–39*b* Spirifera mesocostalis, ventral valve (fair spec.).
855–39*d* Leptocœlia protextum (margins broken); with
855–39*e* Mytilarca chemungensis, of unusual form; and
Athris angelica.
855–40 Aviculopecten cancellatus (J. H.) = 855–32.
855–41 Productella lachrymosa; and
Streptorhynchus chemungensis (weathered).
855–42 Productella boydii (J. H.) = 855–36*a*.
855–43 Athyris angelica.
855–44 Atrypa reticularis, very convex (poor).
855–45 Orthis pennsylvanica, *new species*, Simpson = 9524 of Randall's collection.
855–46 Orthis impressa (seven specimens, and among them)
Orthis—— *new species.* Simpson.
855–46*a* Productella hirsuta.
855–47 Streptorhynchus chemungensis; small.

855–47 Orthis pennsylvanica, *new species*, = 855–46, and Randall's 9524; allied to *Orthis leucosia* G. B. Simpson.
855–48 Productella lachrymosa.
855–49 Athyris angelica.
855–50 a lithological specimen.
855–51 Productella, like 855–36, and
Streptorhynchus chemungensis.
855–52 Productella—— ?
855–53 Athyris angelica.
855–54 Orthis *new species ;* with
Edmondia subovata; also
Productella onusta (impression) ; and
Streptorhynchus chemungensis (J. H.) all in good condition.
855–55 Productella lachrymosa.
855–56 Grammysia elliptica; large.
855–57 Streptorhynchus chemungensis (impressions of fragments); with
Orthis impressa (cast, showing scars) 855–226 Myti larca chemungensis.

Mixtown, Clymen township, Tioga county, Pa., collections by A. Sherwood, from *Upper Chemung* strata, *VIII g.*

856–1 Spirifera mesocostalis (cast).
Triplesia extans (Athyris angelica ? Among other obscure casts and impressions).
856–2 Spirifera mesocostalis.
856–3 Athyris angelica (various casts).
856–4 Athyris angelica (two casts).
856–5 Spirifera disjuncta, very long variety (numerous on a large slab).
856–6 Rhynchonella (Stenoschisma) contracta.
857–7 Dictyophyton (a fragment two inches long).
856–8 Spirifera disjuncta (several casts).
856–9 Rhynchonella (S.) contracta ; see Hall, Pal. N. Y. IV, plate 55, p. 30.
856–10 Athyris angelica (several casts); also
Spirifera mesocostalis (casts).

856–11*b* Spirifera (two good casts); also
856–11*a* Spirifera disjuncta (six individuals).
856–11*c* Mytilarca chemungensis (two).
856–12 Spirifera disjuncta (showing muscular impressions, and very extended hinge line extremities).
856–13 Spirifera disjuncta (casts of parts).
856–14*a* Spirifera disjuncta (cast of part); with
856–14*b* Athyris angelica (cast).
856–15 Athyris angelica (casts); with
Streptorhynchus chemungensis, with alternating striæ. —— On the same block are obscure lamellibranch fragments.
856–16 Athyris angelica; and
Athyris pseudomarginata (*good dorsal valve*).
856–17 Spirifera disjuncta (several casts, with scars).
856–18 Rhynchonella (Stenoschisma) contracta, dorsal valve
856–19 Rhynchonella, ventral valve.
856–20 Athyris angelica (cast, with scar); also
Spirifera mesocostalis (one norsal valve, and another impression).
856–21 Spirifera disjuncta (two).
856–22 Productella arctirostrata (Pal. N. Y. V. pl. 26, f. 22).
856–23 Athyris angelica (*good example*).
856–24 Orthis impressa.
856–25 Leptodesma potens, variety, ventral valve; also
856–25*b* Edmondia subovata.
856–26 Productella lachrymosa?;
856–26*a* Productella arctirostrata; and
many obscure fragments of other brachiopods.
856–27 Spirifera mesocostalis;
Athyris angelica (casts); and
obscure fragments of Productella, etc.
856–28 Orthis pennsylvanica, new species, = 855–47, and Randall's 9524; allied to *Orthis leucosia*.
856–29 Productella boydii.
856–30 Productella boydii.
856–31 obscure.
856–32 Productella arctirostrata, interior of dorsal valve.
858–33 Orthis impressa (J. H.) ventral valve flat (casts of ventral valves).

856–34 Productella lachrymosa.
856–35 obscure.
856–36 Productella exanthemata?
856–37 Rhyn. (Stenoschisma) contracta.
856–38 Rhyn. (Stenoschisma) contracta.
Spirifera disjuncta; and fragments of obscure Productella, etc.
856–39 Spirifera disjuncta.
856–40 Athyris angelica.
856–40*a* Productella boydii, = 555–11;
856–40*b* Productella lachrymosa;
856–40*c* Productella arctirostrata.
856–41 Athyris angelica.
856–42 Athyris angelica (*preserving the shell*).
856–43 Rhyn. (Steno.) contracta, dorsal valve.
856–44 obscure.
856–45 Athyris angelica.
856–46 Rhyn. (Sten.) contracta (two).
856–47 Athyris angelica (numerous).
856–48 obscure.
856–49 Streptorhynchus chemungensis; alternating striæ.
856–52 Spirifera disjuncta (casts).

Charleston township, Tioga county, Pa., at Mill creek bridge, near C. Patridge's, collected by A. Sherwood, in 1875, from a rock outcrop of *Upper Chemung*, *VIII g*.
857–1

Mansfield, Tioga county, collections by A. Sherwood, in 1876, one mile north of the village, in *Upper Chemung* strata, *VIII g*.
858–1 Productella lachrymosa, *var. lima*. (See Hall, Pal. N. Y., Vol. IV, plate 25, *f.* 31.)
858–2 Productella speciosa; and,
Productella exanthemata (fair cast).
858–3 Orthis impressa, dorsal valve of 854–40.
858–4 Ambocœlia umbonata (*good*).
858–5 Rhynchonella (Stenoschisma) contracta (cast of dorsal valve).

858–6 Leptodesma propinquum (two).
858–7 Leptodesma propinquum. (See Pal. N. Y. V., i, plate 91, fig. 16, 17).
858–8 Orthis impressa, dorsal valve (verified by J. Hall) = 854–40.
858–9 Orthis impressa, (three dorsal and one ventral valve): Spirifera mesocostalis; and a Leptodesma ——?
858–10 Productella lachrymosa.
858–11 Orthis impressa (cast of dorsal valve; J. H.).
858–12 Streptorhynchus chemungensis.
858–13 Orthis impressa (dorsal valve partly preserved).
858–14 Productella ——?
858–15 obscure.
858–16 Spirifera mesocostalis; and, Leptodesma lichas (J. H.).
858–17 Discina ampla (poor and doubtful).
858–18 Orthis impressa, dorsal valve, = 854–40.

Franklindale, Bradford county, Pa., at the narrows, one mile east of the village, collected by A. Sherwood, 1876, from *Upper Chemung* strata *VIII g*.

859–1 Grammysia elliptica (two; one large and vertical; the other smaller and less vertical).
859–2 Grammysia elliptica? (crushed).
859–3 Grammysia elliptica (three specimens of the form given by Hall, in Pal. N. Y. V., i., plate 8, figs. 10, 11, 13).
859–4 Grammysia elliptica (five specimens, crushed, showing both valves).
859–5 Grammysia elliptica (both valves).
859–6 Grammysia elliptica (very small specimen).
859–7 Grammysia elliptica (usual form).
859–8 Productella ——?
859–9 Athyris angelica.
859–10 Leptodesma ——? (very poor).
859–11 Leptodesma protextum. Leptodesma extenuatum (three specimens).
859–12 Grammysia elliptica (right valve, large, margins broken, showing hinge line).

859–13 Grammysia elliptica (three large specimens on a slab).

Mansfield, Tioga county, Pa., collections of A. Sherwood, near the village, in 1876, from *Upper Chemung* strata. *VIIIg.*

860–1*a* Orthis impressa (J. H.) two dorsal valves.
860–1*b* Streptorhynchus chemungensis (J. H.).
860–2*a* Athyris angelica.
860–2*b* Spirifera mesocostalis.
860–2*c* Orthis impressa.
860–3 Orthis impressa (J. H.), dorsal valve,=854–40.
860–4 Orthis impressa (J. H.), two casts of ventral valve.
860–5*a* Orthis impressa dorsal valve.
860–5*b* Streptorhynchus chemungensis (ventral valves).
860–6 Cyathophylloid coral (impression of calyx).
860–7 Strophodonta perplana, var. nervosa (interior of ventral valve).
860–8 Strophodonta perplana (two, ditto).
860–9 Spirifera disjuncta (cast).
860–10*a* Atrypa hystrix (J. H.).
860–11*b* Atrypa reticularis (J. H.).
860–11 Spirifera mesocostalis;
Streptorhynchus chemungensis;
Casts of ventral valve of *new species*, 850–25.
860–12 Streptorhynchus chemungensis (flat valves).
860–13 Spirifera disjuncta (several casts on a slab).
860–14 Orthis impressa,=854–40 (cast of inside ventral).
860–15 obscure.
860–16 Streptorhynchus chemungensis (flat valve).
860–17 Spirifera mesocostalis, etc.
860–18 Edmondia obliqua; and
Paracyclas tenuis? (See Pal. N. Y., Vol. 4, plate 72, figs. 20, 21).
860–19 *Fish remains.*
860–20 *Fish remains.*
860–21 Productella arctirostrata.
860–22 Orthis impressa (J. H.), dorsal ventral valves.
860–23 —— *new species.*=850–25.
860–24 Atrypa hystrix (J. H.). See 850–25.

860–25 Productella exanthemata.
860-26 Strophodonta perplana, Var. nervosa.
860–27 —— ——, a beautiful cast, showing crenulations of hinge line and muscular impressions.
860–28 Orthis impressa (J. H.), two dorsal valves.
860–29 Spirifera ——? (cast).
860–30 Orthis impressa (J. H.), cast of ventral valve.
860–31 Streptorhynchus chemungensis.
860–32 Spirifera mesocostalis; and
Orthis impressa (J. H.), cast of ventral valve.
860–33 Rhyn. (Steno.) contracta.
860–34 obscure.
860–35 Productella lachrymosa?
860–36 Paracyclas? (Edmondia) subovato?
860–37 Rhynchonella (Steno.) contracta.
860–38 Streptorhynchus chemungensis (J. H.); also three obscure fragments.
860–39 Strophodonta perplana, Var., nervosa (casts).
860–40 Streptorhynchus chemungensis (flat valve).
860–41 obscure.
860–42 Leptodesma longispina.
860–43 Orthis impressa (J. H.) dorsal valve.
860–44*a* Productella arctirostrata (J. H., *good*).
860–44*b* Orthis impressa (J. H.) cast of ventral valve.
860–44*c* Spirifera mesocostalis.
860–45 obscure.
860–46 obscure.
860–47 Grammysia elliptica.
860–48 Orthis impressa, dorsal valve (J. H.)
860–49 Productella boydii?
860–50 Streptorhynchus chemungensis, flat valve.
860–51 Atrypa hystrix, dorsal valve (J. H.).
860–52 ——— ——— new species (850–25 two dorsal valves, casts).
860–53 Spirifera disjuncta.
860–54 Streptorhynchus chemungensis, dorsal valve (*good*).
860–55 Streptorhynchus chemungensis, two flat valves (J. H.);
860–55 Productella lachrymosa;
860–55*a* Orthis impressa, dorsal valve, = 854–40;

860–55*b* Orthis impressa, dorsal and ventral valves (J. H.).
860–56*a* Athyris angelica.
860–56*b* Spirifera disjuncta.
860–56*c* Spirifera mesocostalis.
860–57 obscure.
860–58 Spirifera disjuncta (hinge line not extended).
860–59 Lyriopecten tricostatus (J. H.) upper part broken away.
860–60 Orthis impressa (J. H.) two casts of dorsal valve.
Streptorhynchus chemungensis? (J. H.) two casts of large specimens.
860–61 Streptorhynchus chemungensis? (impressions of flat valves).
Orthis impressa.
860–62 Strept. chemungensis; two shells and two casts of dorsal valve.
860–63 Productella boydii?
860–64*a* Productella boydii?
860–64*b* Athyris angelica.
860–64*c* Spirifera mesocostalis.
860–65 ——— ——— new species, ventral valve = 850–25.
860–66 Athyris angelica.
860–67*a* Orthis impressa (J. H.) ventral flat valve.
860–67*b* Streptorhynchus chemungensis (J. H.).
860–68 obscure.
860–69 Spirifera mesocostalis.
860–70 Orthis impressa (J. H.), cast of ventral valve.
860–71 Orthis impressa (J. H.), dorsal valve=854–40.
860–72*a* Orthis impressa (J. H.), dorsal valve, with
860–72*b* Productella boydii (J. H.), and
860–72*c* Spirifera mesocostalis (J. H.), all on a slab covered with impressions in poor condition.
860–73 Productella boydii (two).
860–74*a* Ambocœlia umbonata.
860–74*b* Ambocœlia var. gregaria (Pal. N. Y. IV, 44, 22).
860–75 Grammysia elliptica; with
860–75 Orthis impressa (three casts of ventral valve).
860–76 Atrypa hystrix, =850–25 (int. dorsal valve).
860–77 Streptorhynchus chemungensis (impression).
860–78 Atrypa hystrix (J. H.), with

860–78 ——— =850–25 (cast int. dorsal valve).
860–79 Orthis impressa (J. H.), (cast of interior of ventral valve.
860–80 obscure =854–40.
860–81 Spirifera disjuncta.
860–82 Atrypa hystrix (J. H. impression), and
860–82 ——— =850–25 (imp. vent. v.).
860–83 Orthis impressa (J. H.), ventral valve.
860–84 Strept. chemungensis, =854–40.
860–85 Strophodonta cayuta (J. H.).
860–85*a* Strept. chem. (cast of inter. ven. v. *showing ornamentation of hinge line and muscular scar*).
860–85*d* ——— =850–25 (cast showing scar; *very pretty*).
860–86 Atrypa reticularis (J. H.), cast.
860–86 ——— =850–25 (cast and impression of ventral valve).
860–87 Strophodonta perplana, var. nervosa.
860–88 Athyris angelica.
860–89 Productella ———? obscure.
860–90 Spirifera disjuncta (two).

Sullivan township, Tioga county, Pa., collection of A. Sherwood, 1876, from *Upper Chemung* strata, *VIII g*.

861–1 Productella arctirostrata.
Productella lachrymosa.
861–2–3 Productella boydii.
861–3 Productella boydii.
861–4 Grammysia elliptica.
861–5 Productella exanthemata, compare var. hirsuta.
861–6–a Rhychonella (Stenoschisma) contracta.
861–6–b Athyris angelica.
861–7 Productella boydii, both valves.
861–8 Athyris angelica.
861–9 Rhynchonella (Stenoschisma) contracta.
861–10 Rhynchonella (Stenoschisma) contracta.
861–11 too poor to identify.
861–12 Athyris angelica, casts.
861–13 Orthis impressa, dorsal valve.

861–14 Rhynchonella (Stenoschisma) contracta.
861–15 Orthis impressa, ventral valve.
861–16 Productella boydii, one specimen with very long spines.
861–17 Productella boydii.
861–18–a Grammysia elliptica.
861–18–b Orthis impressa, cast of interior ventral valve.
861–18–c Streptorhynchus chemungensis.
861–19 Streptorhynchus chemungensis.
861–20 Athyris angelica, casts of the interior of both valves.
861–21a Goniophora chemungensis.
861–21b Streptorhynchus chemungensis, several specimens, flat valves.
861–21–c Productella lachrymosa, several casts not determined.
861–21–d Spirifera mesacostalis.
861–22 Orthis impressa, dorsal valve.
861–23–2 Productella boydii, large specimens.
861–24 Pterinopecten suborbicularis.
861–25 Spirifera mesacostalis,
Athyris angelica, impressions and casts.
861–26 Productella boydii.
861–27 Orthis impressa, two dorsal valves.
861–28–a Spirifera mesacostalis.
861–28–b Athyris angelica, cast.
861–28–c Productella, too poor to identify.
861–29–2 Productella boydii, long spines.
861–30 Productella arctirostrata, large narrow form.
861–31 Spirifera mesacostalis.
Athyris angelica, cast.
861–32 Athyris angelica.
861–33 Streptorhynchus chemungensis.
861–34 Productella lachrymosa.
861–35 Grammysia elliptica.
861–36 Productella boydii.
861–37 Athyris angelica, cast.
861–38 Productella —— ?
861–39 Streptorhynchus chemungensis.
Spirifera mesocostalis.
861–40 Spirifera disjuncta.
861–41 Rhynchonella (Stenoschisma) contracta.

LIBRARY

DeGolier, McKean county, Pa., collections of C. A. Ashburner & W. A. Fellows, in 1876, along the railroad on the east bank of the Tunangwant creek, near the station, from *Chemung, VIII g.*

862–1–12 Spirifera disjuncta, several specimens and slabs with numerous casts of this species.
862–2 piece of conglomerate.
862–3 Leptodesma mortoni.

Big Shanty, McKean county, Pa., collections of Ashburner & Fellows, in 1876, from the railroad cutting above Bradford division of N. Y. & E. R. R from *Chemung strata VIII g.*

863–1 too poor to identify.
863–2 Brachiopod, very indistinct.

Big Shanty and Lafayette road, McKean county, Pa., on the north slope of the hill, collected by Ashburner & Fellows, 1876, from *Chemung* strata *VIII g.*

864–1–2 Leptodesma ——?
864–2–19 lithological specimens.

Pole Cat (Mahanoy) Valley, Perry county, Pa., collections by J. H. Dewees, August, 1877, on the South side of Mahanoy ridge, George Vetermeyer's land, Duncannon Iron Company's mine, from the *bottom bench* of the *Hamilton upper fossil ore bed, VIII c.*

865–1 Orthis pennsylvanica, ventral valve.
865–2 Spirifera disjuncta, cast.
865–3–8 Spirifera disjuncta, fragments, poor specimens.
865–7 Pterinopecten suborbicularis.

Newport, Perry county, Pa., collections of J. H. Dewees, August, 1877, along the east bank of the Juniata, near the town, from a *fossiliferous limestone, 400 feet below the Catskill bottom red shale, i. e., Upper Chemung, VIII g.*

866–1 Missing.

Newport, Perry county, Pa., collections of J. H. Dewees, 1877, a mile and a half east of the last cited locality, where the same *fossiliferous limestone* bed (five and a half thick) comes again to the river. *VIII g.*

867–1 Productella ——? too poor to identify.
867–2 Ptilodictya gilberti, impressions of several hundred fragments.
867–3 Orthis impressa, dorsal valve.

Middletown quarry, Erie county, Pa., three miles north-west of Union, and two miles north of railroad. Collections from *Panama conglomerate* (White's *Third Oil Sand*). Age uncertain; Upper Chemung? Catskill? Pocono? *VIII–IX–X.*

868–1–47 Rhynchonella (Stenochisma) congregata.

LeBoeuff's quarry, Erie county, Pa., four miles below Union on the A. and G. W. railroad, one mile from LeBoeuff station, on the P. and E. railroad; collections from the *Panama conglomerate* (see last).

869–1 Spirifera disjuncta, poor casts.
869–2 too poor to identify.
869–3 too poor to identify.
869–4 Spirifera disjuncta.
869–5 Rhynchonella (Stenoschisma) congregata.
869–6 too poor to identify.
869–7 Orthis impressa.
869–8 Orthis vanuxemi.
869–9 Athyris angelica.
869–10 too poor for identification.
869–11 Ambocœlia umbonata.
869–12–3 too poor to identify.
869–13 Spirifera mesacostalis.
869–14 Mytilarca occidentalis.
869–15 Spirifera ——? casts, poor.
869–16 Spirifera, poor fragments.
869–17*a* Ambocœlia umbonata.
869–17*b* Productella onusta.

869–17*c* Spirifera disjuncta.
869–18 Spirifera disjuncta, peculiar cast.
869–18–3 too poor to identify.
869–20 Rhynchonella (Stenoschisma) congregata.
869–21–13 too poor to identify.
869–22–2 Spirifera disjuncta.

Salamanca, Cattaraugus county, N. Y. Collections made by C. A. Ashburner, November, 1877, on the high hill top south of the town, from strata *above the Salamanca conglomerate, VIII g.*

870–1–10 Spirifera disjuncta, casts.
870–2 Spirifera disjuncta, casts and impressions, good.
870–3–3 Spirifera disjuncta, semicircular in outline.
870–4 Rhynchonella (Stenoschisma) sappho.
Spirifera disjuncta.
870–5 Spirifera ——? too poor to determine.
870–6–2 Spirifera disjuncta.
870–7–2 Streptorhynchus chemungensis.
870–8–12 Spirifera disjuncta.
870–9–2 Bryozoa impressions, poor.
870–10 Streptorhynchus chemungensis.
870–11 obscure.
870–12–2 obscure.
870–13 Spirifera and Rhynchonella, poor.
870–14–2 Bryozoa impressions, poor.
870–15 too poor for identification.
870–16 Bryozoan impressions, poor.
870–17 Rhynchonella (Stenoschisma) contracta.
870–18 Brachiopoda and Bryozoa, numerous poor fragments.
870–19 Spirifera fragments.
870–20 obscure.
870–21–2 Rhynchonella (Stenoschisma) contracta.
870–22 Productella ——? too poor to identify.

Salamanca, N. Y., Ashburner's collections, from strata a mile north of the town, and at a lower horizon than *Salamanca conglomerate, VIII g.*

871–1–2 Spirifera disjuncta, slabs with numerous casts.
871–2 Bryozoa impressions.
871–3a Rhynchonella (Stenoschisma) sappho, ventral valve, good.
871–3b Spirifera disjuncta.
871–4a Rhynchonella (Stenoschisma) sappho.
871–4b Spirifera disjuncta.
871–5 Aviculopecten ——? broken specimen.
871–6 Leptodesma potens.
871–7–6 Too poor to identify.
871–8 Rhynchonella (Stenoschisma) contracta.

Nichols, Tioga county, N. Y., collections by R. Howell, 1877, from *Chemung VIIIg.*

872–1–6 Strophodonta cayuta.
872–2–a Streptorhynchus resembling chemungensis.
872–2–b Brachiopoda, numerous small fragments.
872–3–2 Crinoidal columns ¼ in. in diameter.
872–4–a Tropidoleptus carinatus.
872–3–b Spirifera ——?
872–5 Crinoid stems, a mass of short pieces.
872–6 Fragments, too poor to identify.
872–7–a Atrypa reticularis, Spirifera disjuncta, Spirifera mesacostalis, Streptorhynchus chemungensis, and ends of crinoid columns.
872–7–b Athyris angelica, Atrypa spinosa, Spirifera disjuncta and Spirifera mesacostalis.
872–7–c Atrypa reticularis, Spirifera mesacostalis, and ends of crinoid columns.
872–7–d Spirifera mesacostalis, Atrypa reticularis impression.
872–7–e Cyrtina tryplicata.
872–7–f Fucoids.
872–7–g Atrypa spinosa, Orthis vanuxemi impression.
872–8 Spirifera mesacostalis.
872–9 Atrypa reticularis.
Spirifera disjuncta, elongate forms, impressions.
872–10 Atrypa, casts, fragments.
872–11–2 Cyathophylloid corals, too much macerated to identify.

872–11–2 Strophodonta cayuta.
872–12–a Spirifera mesacostalis.
872–12–b Productella hirsuta.
872–13 Atrypa spinosa, impression of large one and three small ones with shell.
872–14 Orthis impressa.
872–15–a Strophodonta cayuta.
872–15–b Amboccelia umbonata, and numerous fragments of shells.
872–16 too poor for identification.
872–17–a Spirifera disjuncta.
872–17–b Strophodonta cayuta.
872–18–4 Spirifera disjuncta.
872–19–a Atrypa spinosa.
872–19–b Amboccelia umbonata.
872–19–c Spirifera disjuncta.
872–19–d Spirifera mesacostalis.
872–19–e Atrypa reticularis.
872–20–a Streptorhynchus chemungensis, flat valves.
872–20–b Atrypa spinosa, casts impressions.
872–20–c Orthis impressa, cast ventral valve.
872–21 Orthis impressa, four casts of interior of ventral valve and impression of exterior.
872–22 too poor for identification.
872–23 obscure.
872–24 Brachiopoda fragments.
872–25 too poor for identification.
872–26 Crinoid columns, a mass of short pieces.
872–27 Productella arctirostrata.
872–28 Grammysia elliptica.
872–29 Brachiopoda, impressions of fragments.
872–30–3 too poor for identification.
872–31 Spirifera disjuncta.
872–32–a Goniophora chemungensis.
873–32–b Atrypa spinosa.
872–32–c Streptorhynchus chemungensis.
872–32–d Spirifera disjuncta.
872–33 Goniophora chemungensis.
872–34 Brachiopoda, slab decomposed, poor.
872–35–a Spirifera disjuncta, slab covered with specimens.

872–35–b Atrypa spinosa.
872–36 Atrypa spinosa.
872–37 Loxonema teretra.
872–38–a Streptorhynchus chemungensis, impressions.
872–38–b Atrypa spinosa.
872–38–c Spirifera disjuncta.
872–38–d Spirifera mesocostalis.
872–39–a Mytilarca ——?
872–39–b Atrypa spinosa.
872–39–c Strophodonta cayuta.
872–39–d Pleurotomaria ——? poor casts.
872–39–e Ambocœlia umbonata.
872–39–f Spirifera mesacostalis.
872–40–a Pleurotomaria sulcomarginata, casts.
872–40–b Loxonema terebra, impressions.
872–41–a Ambocœlia umbonata, numerous casts.
872–41–b Strophodonta cayuta.
872–42 Pterinea chemungensis, impressions.
872–43 Atrypa spinosa, slab covered with impressions.
872–44 slab with decomposed fossils, obscure.
872–45a Ambocœlia umbonata, var. gregaria.
872–45b Mytilarca chemungensis.
872–45c Strophodonta cayuta.
872–46a Productella boydii, with nodes arranged in concentric lines.
872–46b Loxonema terebra, impression.
872–46c Brachiopoda, fragments, rock much decomposed.
872–47a Streptorhynchus chemungensis, several specimens.
872–47b Atrypa spinosa, small specimen and cast.
872–47c Spirifera disjuncta, casts.
872–47d Strophodonta cayuta.
872–48a Atrypa spinosa.
872–48b Orthis impressa, two casts.
872–48c Streptorhynchus chemungensis.
872–49 Atrypa spinosa, principally casts.
872–50a Atrypa spinosa, casts.
872–50b Pterinea consimilis.
872–51 Streptorhynchus chemungensis.
872–52 obscure.
872–53 Crinoid columns, slab of small fragments.

Meshoppen, Wyoming county, Pa., collections of A. Sherwood, Oct., 1877, from *Chemung*? *VIIIg*?

873–1–11 Archaeopteris minor, branches and pinnae.
873– Fish remains, unidentified.

Kane, McKean county, Pa., collections of C. A. Ashburner and L. E. Hicks, 1878, from *Chemung strata*, *VIIIg*.

874–1 Lepidodendron ——? structure obscure.
874–2 Lepidodendron ——?
874–3–2 lithological specimen.

Centreville, Elk county, Pa., collections of C. A. Ashburner, 1877, from *Chemung upper strata*, *VIIIg*.

875–1 Missing.

Big Shanty, McKean county, Pa., collections by L. E. Hicks, 1877, on the Bradford branch of the Erie railroad, near the station, from *Chemung* strata, *VIIIg*.

876–1 Plant remains, slab covered with small oval elevations, some have the appearance of roots or stems.
876–2a Rhynchonella (Stenoschisma) orbicularis.
876–2b Rhynchonella (Stenoschisma) eximia.
876–3a Coelospira? concava.
876–3b Leiopteria dekayii.
876–4 Modiomorpha quadrula.
876–5 Leptodesma——? too poor to identify.

McKean county collections in 1878, by A W. Sheafer, from *Chemung strata*, *VIIIg*.

877–1 Orthis leucosia.
877–2 Plant impressions.
877–3 Plant impressions.

Ludlow and Wetmore, McKean county, collections by L. E. Hicks, along the P. & E. railroad between the two places, from *Che nung* strata *VIII g.*

878–1–3 Orthis leucosia.
878–2 Streptorhynchus chemungensis.
878–3 Athyris angelica.

Larabee junction, McKean county, Pa., collections by L. E. Hicks, from *Chemung* strata, *VIII g.*

879–1 Spirifera disjuncta.
879–2–3 too poor for identification.
879–3 Streptorhynchus chemungensis.

Kane, McKean county, Pa., collections by L. E. Hicks, from "*Chemung*," *VIII g.* [If at Kane itself the specimens should be *subcarboniferous*, *X* or *XI.*]

880–1 Arthrophycus harlani.
880–2–a Orthoceras ——— ? small fragment.
880–2–b Rhynchonella (Stenoschisma) sappho.
880–3 Spirifera ——— ?
880–4 Brachiopoda, small cast, poor.
880–6–2 Too poor to identify.

Bradford, McKean county, collections by L. E. Hicks in one of the city street cuttings, in *Chemung* strata, *VIII g.*

881–1 Chonetes scitula.
881–2–a Spirifera disjuncta.
881–2–b Rhynchonella (Stenoschisma) duplicata.
881–3 Rhynchonella ——— ?
881–4 Productella hirsuta.
881–5 Crinoid columns, impressions of ends.
881–6 Plant.

Kinzua creek, near McKean county line, collections by L. E. Hicks, above water in *Chemung* strata, *VIII g.*

882–1 Ptychoparia salamanca.

882–2 Orthis leucosia, var. pennsylvanica.
882–3 Rhynchonella (Stenoschisma) sappho.
882–4 Spirifera disjuncta.
882–5 Lamellibranch, poor and broken.
882–6 Orthis impressa.

Nichols, Tioga county, N. Y., collections by R. Howell, in *Chemung* strata, *VIII g.*

883–1 Cyathophylloid, impression of exterior.
883–2 Chaetetes ——— ? poor.
883–3 Crinoid columns, impressions.
883–4 Leptodesma, impressions, poor.
883–5 Crinoid columns, impressions.
883–6 Loxonema terebra, impression and portion of cast.
883–7a Bellerophon maera, impression.
883–7b Loxonema terebra, poor impression.
883–8 Nuculites ——— ? showing crenulations of hinge line.
883–9 Lepidodendron, small, poor.
883–10 Atrypa spinosa.
883–11 Loxonema terebra.
883–12 Atrypa spinosa.
883–13 Strophodonta perplana, showing muscular impressions finely.
883–14 Streptorhynchus chemungensis.
883–15 Streptorhynchus chemungensis.
883–16 Goniophora carinata, two impressions.
883–17 Gasteropoda, imperfect casts.
883–18 Casts, too imperfect to identify.
883–19 Crinoid columns, ornamentation beautiful.
883–20 Bryozoa, ramose forms, impressions, much worn.
883–21 Orthoceras, outer chamber of species of.
883–22a Bellerophon maera.
883–22b Loxonema terebra, impressions.
883–22 Pleurotomaria ——— ? impression, structure gone.
883–23 Pleurotomaria, opposite face of above.
883–24 fossil remains, too decomposed to identify.
883–25*a* Atrypa spinosa.
883–25*b* Streptorhynchus chemungensis.

883–26 Streptorhynchus chemungensis.
883–27 Streptorhynchus chemungensis.
883–28–2 Bellerophon maera, numerous casts.
883–29 Orthoceras ——? too poor to identify.
883–30 Orthoceras? very small piece.
883–31–2 Spirifera disjuncta.
883–32*a* Orthis impressa.
883–32*b* Spirifera disjuncta.
883–33 lithological specimen.
883–34–9 Spirifera disjuncta.
883–35 Loxonema terebra, poor impression.
883–36 lithological specimen.
883–37 Euomphalus (Straparollus) cylmineoides.
883–38 obscure.
883–39 Spirifera disjuncta.
883–40 Loxonema terebra, impression poor.
883–41 Strophodonta cayuta, cast showing muscular impression.
883–42–2 Crinoid columns, impressions of small pieces, surface markings very pretty.
883–43–4 Casts, too poor for identification.
883–44 Bellerophon maera, poor impressions.
883–45 Bellerophon maera, poor impressions.
883–46 Spirifera disjuncta, very transverse.
883–47 Cyathophylloid, impression of calyx.
883–48 Cyathophylloid.
883–49 Streptorhynchus chemungensis.
883–50a Crinoid columns, impressions of ends.
883–50b Strophodonta cayuta.
883–51 Streptorhynchus chemungensis.
883–52–4 too poor for identification.
883–53 Productella ——?
885–54 Crinoid stems, impressions.
883–55 lithological specimen.
883–56 too poor for identification.
883–57a Strophodonta cayuta.
883–57b Atrypa spinosa.
883–58 Plant stem.
883–59 Streptorhynchus chemungensis, slab containing many specimens.

883–60 Streptorhynchus chemungensis, several specimens on slab.
883–61a Streptorhynchus chemungensis.
883–61b Orthis impressa, cast, ventral valve.
883–62 Streptorhynchus chemungensis, several specimens.
883–63 Crinoid columns, nodose surface.
883–64a Spirifera disjuncta.
883–64 Spirifera mesacostalis.
883–64c Atrypa spinosa.
883–64d Productella, very poor.
883–65a Atrypa spinosa.
883–65b Streptorhynchus chemungensis.
883–66 Bryozoa, ramose, remains, very indistinct.
883–67 Streptorhynchus chemungensis, slab with several specs.
883–68a Pleurotomaria —— ? poor casts.
883–68b Loxonema terebra, poor impression.
883–68c Bellerophon maera, impression.
883–69 Bryozoa, ramose, poor impressions.
883–70 Grammysia elliptica, posterior position.
883–71a Atrypa spinosa, cast.
883–71b Streptorhynchus chemungensis.
883–72a Streptorhynchus chemungensis.
883–72b Spirifera disjuncta.
883–73 Crinoid columns.
883–74–5 Streptorhynchus chemungensis.
883–75 Spirifera disjuncta.
883–76 water-worn rock, fossils indistinct.
883–77a Schizodus rhombeus.
883–77b Productella speciosa ?
883–77c Productella exanthemata.
883–78a Grammysia elliptica, anterior portion.
883–78b Streptorhynchus chemungensis.
883–79 Streptorhynchus chemungensis.
883–80a Streptorhynchus chemungensis.
883–80b Atrypa spinosa.
883–80c Orthis impressa, cast.
883–80d Spirifera disjuncta.
883–81 Streptorhynchus chemungensis.
883–82a Streptorhynchus chemungensis.

883–82b Orthis impressa.
883–82c Spirifera disjuncta.
883–82d Spirifera mesacostalis.
883–82e Rhynchonella (Stenoschisma) sappho.
883–83 Streptorhynchus chemungensis, flat valve.
883–84 Streptorhynchus chemungensis, flat valve broken.
883–85 Spirifera mesacostalis.
883–86a Modiomorpha —— ?
883–86b Pterinea consimilis.
883–87a Orthis impressa, cast, ventral valve.
883–87b Streptorhynchus chemungensis.
883–88–41 Streptorhynchus chemungensis, small fragments and bits of impressions.
883–89–9 too poor to determine.
883–90–5 Spirifera mesacostalis.
883–91 Chonetes scitula.
883–92 Spirifera mesacostalis.
883–93a Orthis impressa.
883–93b Pterinea consimilis.
883–94–2 Streptorhynchus chemungensis, slabs with numerous specimens representing different phases of this species.

Lycoming county, collections by A. Sherwood, 1877, on the west line of Anthony township, between W. Marshal's and A. Stabler's, from *Chemung* strata, *VIII g*.

884–1–9 Productella boydii, dorsal valves.
Rhynchonella (S.) eximia.
884–2–5 Rhynchonella (Stenoschisma) eximia.
Productella —— ?
884–3–7 Productella boydii.
884–4–2 Productella boydii, dorsal valves.
884–5 Rhynchonella (Stenoschisma) eximia.
884–6 Rhynchonella (Stenoschisma) eximia.
884–7a Leptodesma lepidum.
884–7b Productella boydii.
Rhynchonella (S.) eximia.
884–8a Productella hirsuta var.

884–8b Rhynchonella (S.) sappho.
884–9a Productella boydii.
884–9b Rhynchonella (S.) eximia.
884–9c Sphenotus clavulus.
884–10a Productella boydii, both valves.
884–10b Rhynchonella (Stenoschisma) eximia.
884–11 Productella boydii.
884–12a Rhynchonella (S.) eximia.
884–12b Productella boydii.

Roulette, Potter county, Pa., collections of A. Sherwood, 1876, from railroad cut, *Chemung strata*, *VIII g.*

885–1–17 Archaeopteris minor.

Middletown, Bradford county, collections of A. Sherwood, on Bentley Creek, near the village, in *Upper Chemung* rocks, *VIII g.*

886–1a Leiopteris —— ?
886–1b Lingula punctata?
186–2a Cypricardites (Schizodus) rhombeus.
886–2b Ptychopteria falcata.
886–2c Rhynchonella (Stenoschisma) contracta, var.
886–3 Goniophora chemungensis.
886–4 Lingula punctata?
886–5–2 Rhynchonella (S.) eximia.
886–6 Plants?

Harrison valley, Potter county, Pa., collections by A. Sherwood, 1876, on H. Holcomb's land, a mile below the village, from *Upper Chemung* strata, *VIII g.*

887–1–4 lithological specimens, "Grindstone grit."

Sharon township, Potter county, collections of A. Sherwood, 1876, from *Upper Chemung*, *VIII g.*

888–1 Conglomerate, small piece.
888–1–2 Conglomerate.
888–3 Conglomerate, very small pebbles.

Roulette, Potter county, Sherwood's railroad cut collections, 1876, from *Upper Chemung, VIII g.*

889–1 Lamellibranchiata, obscure.
889–2–2 Plants, small pieces.
880–3 Plant stems.
889–4 Fish scale.
889–5 Conglomerate, small pieces.

East Liberty, Bradford county, Pa., Sherwood's collections in the neighborhood from *Chemung* strata *VIII g.*

890–1–2 lithological specimens.
890–2 fragments of fossils.
890–3 Spirifera præmatura.
890–4 lithological specimen.
Brachiopoda ? fragments.
890–5 Fish plate.
890–6 Fish, end of clavicle.

Linden, Lycoming county, Pa., Sherwood's collections from the *iron ore bed at the top of the Chemung, VIII g.*

891–1a Athyris angelica.
891–1b Productella hirsuta.
891–1c Productella rarispina.
891–1d Streptorhynchus chemungensis.
891–2–2 Crinoid stems, impressions of ends.
891–3a Productella hirsuta.
891–3b Streptorhynchus chemungensis.
891–4 Productella hirsuta.
891–5 Streptorhynchus chemungensis.
891–6 Productella hirsuta.
891–7 Productella rarispina.

Summit Falls creek, Bradford county, half way between Middletown and Smithfield, Sherwood's collections from *Chemung, VIII g.*

892–1 lithological specimen, conglomerate.
892–2–3 Conglomerate.

Logan Station, Lycoming county, Pa., Sherwood's collections on P. R. Hays' land, from *Chemung iron ore bed, VIII g.*

893–1–2 lithological specimens.
893–2 Rhynchonella ——? broken fragments.
893–3 lithological specimen.
893–4 Rhynchonella ——? fragments.
893–5 lithological specimen.
893–6 lithological specimen.
893–7 Fish remains.
893–8 Fish bone.
893–9 Fish plates, from head.
893–10 Fish tooth.
893–11 lithological specimen.

Seeley creek branch of Timber creek, Tioga county, Pa., five miles east of Mansfield, collections by A. Sherwood, May, 1875, from the *Chemung-Catskill fish bed, VIII-IX.*

900–1–6 Fish scales.
900–2–7 Fish scales, with concentric lines and punctate.
900–3–4 Fish scales, with concentric lines and punctate.
900–4 Fish scales, slab with several specimens.
900–5a Fish scale.
900–5b Fish spine.
900–6–6 Fish scales.
Fish spine and scale.
900–7 Fish spine.
900–8 Fish tooth and scale.

Sellard's (J. and E.) land, *Upper Chemung (Mansfield) ore bed, VIII g.*

901–1 Hederella —— ?
901–2–11 Fish plates.
Rhynchonella —— ? fragments.
900–3–2 Fish plates.
Rhynchonella —— ?
900–4 Fish plates.
900–5 Productella —— ?
900–6 Fish plates.

Mansfield, Tioga county, Pa., collections of Sherwood, four miles north of the village, from the *Catskill fish bed, IX.*

902–1–27 Fish scales.
902–2–8 Fish remains.
902–3 Holoptychius, scales and piece of rib.
902–4 Fish plate.
902–5 Fish tooth.
902–9 Fish plates.

Auburn Centre, Susquehanna county, Pa., Sherwood's collections, 1877, one mile south of the village, in *bottom Catskill* strata, *IX.*

903–1 Ripple marks and fucoids.
903–2–8 Archæopteris minor, fronds.
903–3 Archæopteris minor, stem.
903–4 lithological specimen.

Jordan township, Lycoming county, Pa., Sherwood's collections, 1877, one mile above the mouth of Indian Camp run, on Muncy creek, in *Catskill red beds, IX.*

804–1–29 Fish scales.
904–2 Fish plates, large.
904–3–7 Fish scales and plates.
904–4 Fish spine.

West Branch township, Potter county, Pa, Sherwood's collections, on W. Br. Pine creek, from *Catskill red beds, IX.*

905–1–11 Lithological specimens, grey shale.

Coudersport, Potter county, Pa., Sherwood's collections, on the road to Homer, 1¾ miles from Coudersport, on top of the mountain, in "*Catskill grey*" (*Pocono*) strata *X*.

906–1–2 Stigmaria? stem 18" long, 2½" wide.
906–2–2 Plant stems, rugose.
906–3–3 Plant stems, slender, straight, rugose.
906–4–2 Stigmaria? impressions of long narrow stems.
906–5–3 Lepidodendron——?

Sideling Hill tunnel, Huntingdon county, Ashburner's collections in *Pocono* strata, *X*.

[For these specimens marked $\frac{x}{1}$, see elsewhere.]

Brookfield Coal Co's. tunnel, Trumbull county, Ohio, near State line, two miles south-west of Sharon, Pa. Series collected by I. C. White, 1856, at various geological depths beneath the *Sharon coal bed* (near the bottom of the conglomerate) and so marked *in feet.*

1000–1 Lepidodendron ——?
1000–2 Obscure fragments.
1000–3 Lamellibranchiata and Brachiopoda impressions.
1000–4 Fish remains.
Brachiopoda, faint impressions.
1000–6 Fish spine.
1000–7 Fish remains, obscure.
1000–8 Fish spine.
1000–9 Brachiopoda.
1000–10 Fucoids.
1000–11 lithological specimen.
1002–12 Plant stem.
1000–13 Fish tooth.
1000–14 Fish spine and plate.
1000–15 Fish scale.
1000–16 lithological specimen.
1000–17 lithological specimen.
1000–18–2 Rhynchonella——?
1000–18 Chonetes, Palaeoneilo, Sphenotus, etc.

1000–19 obscure fish and plant remains.
1000–20 Plant stems, finely striated.
1000–21 lithological specimen.
1000–22 Rhynchonella ——?
1000–23 Plant remains, obscure.
1000–24 undetermined.
1000–25 Plants, obscure remains.
1000–26 Plants, obscure remains.

Congruity, Westmoreland county, Pa., half a mile northwest of Harvey's Five Points. Collections by H. D. Metzgar, 1875, from *Carboniferous* shale and limestone, *XIV.*

C1–1–12 Spirifera planoconvexa, large slabs containing hundreds of specimens.
C1–2 Chonetes granulifera.
C1–3–a Spirifera planoconvexa.
C1–3–b Streptorhynchus crassus.
C1–3–8 Streptelasma prolificum=Lophophyllum prolificum.
C1–4–3 Spirifera planoconvexa.
C1–5 Astartella vera.
C1–6 Productella pertenuis.
C1–7 Streptorhynchus crassus.
C1–8 Spirifera planoconvexa, numerous specimens.
C1–9–2 Spirifera planoconvexa.
Streptorhynchus crassus.

Congruity. C. E. Hall's Collections, June, 1875, at the last named place, in the same strata.

C2–1–14 Spirifera planoconvexa, several hundred individuals.
C2–2–5–a Spirifera planoconvexa.
C2–2–5–b Streptorhynchus crassus.
C2–3 Spirifera planoconvexa, and crinoid stems, poor.
C2–4–6 Spirifera planoconvexa.
C2–5 Chontes granulifera.
C2–6 Streptorhynchus crassus.
C2–7 Streptorhynchus crassus, fragment.
C2–8 obscure.
C2–9 Chonetes granulifera.

C2–9–a Streptorhynchus crassus.
C2–9–b Fish tooth.
C2–10–3 Streptelasma prolificum.
C2–11 Athyris subtillis.
C2–12–4 Spirifera planoconvexa.
C2–13–2 Streptorhynchus crassus.
C2–14 too poor to identify.
C2–15–3 Spirifera planoconvexa, slabs containing hundreds of individuals.

Greene county, Pa. Collections by I. C. White, June, 1875, four miles from Cumberland village, from the roof shales of the *Waynesburg Coal bed XV.*

C3–1–4 Pecopteris ——?
C3–2 Pecopteris ——? large frond.
Neuropteris angustifolia, large leaf.
C3–3 Fern.

Greene county, Pa., on Muddy creek, half a mile from Cumberland village, I. C. White's collections, June, 1875, from roof shale of the *Waynesburg Coal, XV.*

C4–1 Fern, very obscure fragment.
C4–2–3 Pecopteris loschii.
C4–3 Neuropteris angustifolia (cordata).
C4–4 Sphenophyllum schlotheimi.
C4–5–2 Neuropteris angustifolia (cordata).
C4–6–4 Sphenopteris cristata.
C4–7 Decranophyllum demorphum.
Neuropteris loschii.
Pecopteris ——?
C4–8 Neuropteris angustifolia (cordata).
Sphenophyllum bifurcatum.
Sphenophyllum emarginatum.
C4–9–3 Pecopteris ——?
C4–10–6 Sphenophyllum emarginata.
C4–11–8 Neuropteris angustifolia.
C4–12–2 too obscure to determine.
C4–13–3 Neuropteris loschii.

Washington, Wash. Co., Pa , at first railroad tunnel one mile east of town, I. C. White's collections from the *Washington limestone roof shales, XVI.*

C5–1–7 Sigillaria brardi.
C5–2 Sigillaria remiformis.
C5–3 Sigillaria ——?
C5–4–3 Sigillaria ——?
C5–5 Stigmaria with leaves or root of Sigillaria brardi.
C5–6–6 Sigillaria brardi.
C5–7 Sigillaria ——?
C5–8a Sigillaria leaves.
C5–8b Spirorbis carbonarius.
C5–9–3 Cordaites mansfieldi?
C5–10–2 Sigillaria, finer than brardi.

Centretown, Greene County, Pa., I. C. White's collections, near Jno. Hoge's one and one-half miles from Oak Forest, from *Upper Coal Measures, XVI.*

C6–1–11 lithological specimens.
C6–2–10 Shells ——?
C6–3–2 Sigillaria leaves.
C6–4 Sigillaria leaves.
C6–5–4 Sigillaria ——?
C6–6–7 Fish scales, numerous, small.
C6–7 Sigillaria brardi, with leaves.
C6–8 Sigillaria brardi, with leaves.
C6–9–4 Sigillaria brardi, poor.
C6–10 Sigillaria brardi.

Pinegrove neighborhood, Schuylkill Co., Pa., collections of F. A. Genth, from the *Mauch Chunk red shale.*

C7–1–2 lithological specimens.
C7–2–5 Archaeopteris minor.
C7–3–9 lithological specimens.
C7–4–3 lithological specimens.

REVISED CATALOGUE

OF A

Portion of Randall's collection published on page 27 above.

By G. B. Simpson.

9467 Streptorhynchus chemungensis.
9468 Streptorhynchus chemungensis.
9469 Strepterhynchus chemungensis.
9470 Strepterhynchus chemungensis.
9471 Platyceras varians.
9472A Platyceras inequalis.
8472B Platyceras varians.
9472C Platyceras mitelliformis.
9476 Cyrtina triplicata.
9477 Pleurotomaria.
9480 For Productus, read *Syringothyris angulata.*
9495 For Avicula, read *Leptodesma leiopteroides.*
9496 For Allorisma ? read *Mytilops metella.*
9497 For Allorisma ? read *Mytilops metella.*
9498 For Allorisma ? read *Mytilops præcedens.*
9499 For Grammysia read *Ptychopteria galene.*
9500 For Grammysia read *Ptychopteria galene.*
9501 For Grammysia read *Ptychopteria galene.*
9502A For Grammysia read *Ptychopteria galene.*
9502B For Grammysia read *Leptodesma lamellosum.*
9504A Platyceras brevis.
9504B Platyceras dorsalis.
9504C Platyceras striata.
9505 Rhynch. (Stenoschisma) eximia.
9506 For Rhynchonella missouriensis read *Rhyn. striata.*
9507 For Rhynchonella missouriensis read *Rhyn. striata.*
9508 For Rhynchonella missouriensis read *Rhyn. striata.*
9509 For Rhynchonella missouriensis read *Rhyn. medialis.*

9510 For mollusk read *Rhynchonella* (*Stenoschisma*) *eximia.*
9511 For mollusk read *Rhynchonella* (*Stenoschisma*) *eximia.*
9512 For mollusk read *Rhynchonella* (*Stenoschisma*) *eximia.*
9520A For Orthis michelini read *O. pennsylvanica.*
9520B For Orthis michelini read *O. leucosia.*
9521 For Orthis michelini read *O. leucosia.*
9522 For Orthis michelini read *O. pennsylvanica.*
9523 For Orthis michelini read *O. pennsylvanica.*
9524 For Orthis michelini read *O. pennsylvanica.*
9529 Spirifera disjuncta.
2530 Spirifera disjuncta.
2531 Spirifera disjuncta and *Spirifera mesocostalis.*
9532 For Spirifera read *Syringothyris randalli.*
9533 For Spirifera read *Syringothyris randalli.*
9534 For Spirifera read *Syringothyris randalli..*
9535 For Spirifera read *Syringothyris angulata.*
9536 Spirifera disjuncta.
9537 Spirifera disjuncta.
9538 For Spirifera read *Syringothyris angulata.*
9539 Rhynchonella (Stenoschisma) eximia.
9540 Rhynchonella (Stenoschisma) eximia.
9541 Rhynchonella (Stenoschisma) eximia.
9542A Athyris spiriferoides.
9542B Meristella incerta.
9543 For Edmondia read *Pararca erecta.*
9544 For Edmondia read *Pararca erecta.*
9545 For Edmondia read *Pararca venusta.*
9546 For Edmondia read *Pararca erecta.*
9547 For Edmondia read *Pararca venusta.*
9548 Aviculopecten æqualata.
9549 Aviculopecten æqualata.
9550 For Aviculopecten read *Crenipecten winchelli.*
9551 For Aviculopecten read *Lyriopecten tricostatus.*
9552 For Aviculopecten read *Lyriopecten alternatus.*
9553 For Aviculopecten read *Lyriopecten alternatus.*
9554 For Avicula read *Leptodesma leiopteroides.*
9555 For Avicula read *Leptodesma leiopteroides.*
9556 For Avicula read *Leptodesma leiopteroides.*
9565 For Bryozoa read *similar to Dictyophyton.*
9566 For Bryozoa read *plant remains.*

9567 For Bryozoa read *plant remains.*
9570 For Sanguinolites read *Mytilops præcedens.*
9571 For Leptæna read *Streptorhynchus chemungensis var.*
9572 For Leptæna read *Streptorhynchus chemungensis var.*
9573 For Leptæna read *Streptorhynchus chemungensis var.*
9574 For Leptæna read *Streptorhynchus chemungensis var.*
9575 For Leptæna read *Streptorhynchus chemungensis var.*
9577 For Aviculopecten read *Crenipecten caroli.*
9578 For Aviculopecten read *Goniophora curvata.*
9579 For Aviculopecten read *Lyriopecten fasciatus.*
9580 For Aviculopecten read *Crenipecten.*
9581 For Schizodus read *Paracyclas erecta.*
9582 Schizodus chemungensis.
9583 For Schizodus read *Paracyclas erecta.*
9584 R. (Stenoschisma) eximia.
9585 R. (Stenoschisma) eximia.
9586 R. (Stenoschisma) eximia.
9587 For Avicula read *Leptodesma.*
9588 R. (Stenoschisma) eximia.
9589 For Avicula read *Spirifera disjuncta.*
9590 For Avicula read *Ptychopteria proto.*
9591 Spirifera disjuncta.
9592 Spiritera disjuncta.
9593 Spirifera disjuncta.
9594 Spirifera disjuncta.
9603 Euomphalus.
9604 Pleurotomaria ——— ? n. sp.
9605 Pleurotomaria.
9606 For Schizodus read *Grammysia communis.*
9607 For Schizodus read *Grammysia communis.*
9608 For Schizodus read *Grammysia communis.*
9609 For Schizodus read *Grammysia communis.*
9610 For Cypricardia read *Leptodesma parallela.*
9611 For Cypricardia read *Leptodesma protextum.*
9612 For Cypricardia read *Ptychopteria falcata.*
9613 For Allorisma read *Ptychopteria beecheri.*
9614 For Allorisma read *Ptychopteria lata.*
9615 For Allorisma read *Ptychopteria lata.*
9616 For Allorisma read *Ptychopteria beecheri.*
9617 For Allorisma read *Ptychopteria beecheri.*

9618 For Allorisma read *Ptychopteria beecheri.*
9619 For Allorisma read *Ptychopteria lata.*
9620 For Allorisma read *Ptychopteria beecheri.*
9621 For Allorisma read *Ptychopteria beecheri.*
9622 For Yoldia? read *Ptychopteria n. sp.*
9623 For Yoldia? read *Ptychopteria galena.*
9624 For Yoldia? read *Ptychopteria galena.*
9625 For Yoldia? read *Ptychopteria galena.*

LIST OF

THE PUBLICATIONS

OF THE

GEOLOGICAL SURVEY OF PENNSYLVANIA.

FROM 1874 TO 1889.

ANNUAL REPORTS.

1885 ANNUAL. J. P. Lesley, State Geologist, 8°, 769 pp., with preface and index, accompanied by Atlas 8°, 8 pl., and maps, 1886, contains following special reports:

1. Oil and Gas. John F. Carll.
2. Vegetable Origin of Coal. Leo Lesquereux.
3. Pittsburg Coal Region. E. V. d'Invilliers.
4. Wellersburg Coal Basin. J. P. Lesley and E. B. Harden.
5. Tipton Run Coal Basin. C. A. Ashburner.
6. Anthracite Coal Region. C. A. Ashburner.
7. Wyoming Valley Fossils. C. A. Ashburner and A. Heilprin.
8. Bernice Coal Basin. C. A. Ashburner.
9. Mehoopany Coal Field. F. A. Hill.
10. Cornwall Ore Mines. J. P. Lesley and E. V. d'Invilliers.
11. Delaware and Chester Kaolins. J. P. Lesley and C. A. Ashburner.
12. Quaternary Geology, Wyoming Valley. C. A. Ashburner, F. A. Hill, and H. C. Lewis.
13. Pressure, &c., of Rock Gas. J. P. Lesley.
14. Progress Geodetic Survey. Mansfield Merriman.

1886 ANNUAL. J. P. Lesley, State Geologist, 8°, in four parts, as follows:

i. Pittsburgh Coal Region. E. V. d'Invilliers.
ii. Oil and Gas Region. J. F. Carll, F. C. Phillips, B. S. Lyman.
iii. Anthracite Coal Region with Atlas. F. A. Hill.
iv. 1. The Lehigh River Cross Section. Arthur Winslow.
2. Paint Ores along the Lehigh River. F. A. Hill.
3. Iron Ore Mines and Limestone Quarries of the Cumberland-Lebanon Valley. E. V. d'Invilliers.
4. Geology of Radnor township, Delaware co., &c. T. D. Rand. With an Atlas.

MISCELLANEOUS REPORTS.

A. A history of the FIRST GEOLOGICAL SURVEY of Pennsylvania, from 1836 to 1858, by J. P. Lesley. With the annual reports of the Board to the Legislature for 1874 and 1875. 8°, pp. 226, 1876.

B. Report on the MINERALS of Pennsylvania, by F. A. Genth; and on the hydro-carbon compounds, by S. P. Sadtler. With a reference map of the State. 8°, pp. 206, 1875.

B2. Report on the MINERALS, by F. A. Genth, continued from page 207 to 238. 8°, in paper cover, pp. 31, 1876. (Bound with B.)

M. Report of CHEMICAL ANALYSES in 1874–5, in the Laboratory at Harrisburg, by A. S. McCreath. 8°, pp. 105, 1875.

M2. Report of CHEMICAL ANALYSES in 1876–8, by A. S. McCreath; Classification of coals, by P. Frazer; Fire-brick tests, by F. Platt; Dolomitic limestone beds, by J. P. Lesley; Utilization of anthracite slack, by F. Platt; Determination of Carbon in iron or steel, by A. S. McCreath. With one folded, plate (section at Harrisburg) and four page plates. 8°, pp. 438, 1879.

M3. Report of CHEMICAL ANALYSES in 1879–80, by A. S. McCreath. With a reference map of 93 iron ore mines in the Cumberland Valley. 8°, pp. 126, 1881.

N. Report on the LEVELS above tide of railroads, canal and turnpike stations, mountain tops, &c., in and around Pennsylvania, in 200 tables, by C. Allen. With a map. 8°, pp. 279, 1878.

O. CATALOGUE of specimens collected by the survey, (No. 1 to No. 4,264,) by C. E. Hall. 8°, pp. 217, 1878.

O2. CATALOGUE (continued from No. 4,265 to No. 8,974); also catalogue of

O3. CATALOGUE (continued from No. 8975 to No. 12872. Also Catalogue of special collections of fossils in stratigraphical order, from 201–1 to C 7–4–3; and Revised Catalogue of Randall's collection, from 9467 to 9625. 8°, pp. 260, 1889.

ossils, (pp. 231 to 239.) 8°, pp. 272, 1890.

P. Report on the COAL FLORA of Pennsylvania and the United States. Vols. 1 and 2, (bound together,) by L. Lesquereux. 8°, pp. 694, 1880.

P. Report on the COAL FLORA of Pennsylvania and the United States Vol. 3, with 24 double page plates (lithographed) of coal plants, to accompany P., Vols. 1 and 2. 8°, pp. 283, 1884.

(P.) ATLAS of 87 double page plates (lithographed) of coal plants to accompany P., Vols. 1 and 2. 8°, 1879.

P2. Report on Permo-Carboniferous plants from W. Va. and Greene county, Pennsylvania, by W. M. Fontaine and I. C. White. With 38 double page plates (lithographed). 8°, pp. 143, 1880.

P3. Description of *Ceratiocaridæ*, by C. E. Beecher; and of *Eurypteridæ*, by James Hall. With 8 plates. 8°, pp. 39, 1884.

P4. DICTIONARY OF FOSSILS found in Pennsylvania and elsewhere with electrotype illustrations of the various forms. In 2 volumes and an appendix, by J. P. Lesley. Volume I in press. Volume II, in preparation. 8°, pp. 800±, 1889.

X. GEOLOGICAL HAND ATLAS of the sixty-seven counties of Pennsylvania, with a short explanation of the geological structure of each county, embodying the results of the field work of the survey from 1874 to 1884, by J. P. Lesley. With 62 colored maps and a cross section. 8°, pp. cxii, 1885.

Z. Report on the TERMINAL MORAINE across Pennsylvania, by H. C. Lewis; including extracts from descriptions of the Moraine in New Jersey

by G. H. Cook, and in Ohio, Kentucky and Indiana, by G. F. Wright. With a map of the State, 18 photographic views of the Moraine, and 32 page plate maps and sections. 8°, pp. lvi and 299, 1884.

GRAND ATLAS, Div. I, Pt. I, 1885, port-folio containing maps of 56 counties and parts of counties (scale 2 miles to 1 inch) on 49 sheets (26″×32″.) These maps are duplicate prints on heavy paper of the county maps contained in the reports of progress.

Annual Report, 1886. Part IV.

ANTHRACITE REGION.

A 2. Report on the causes, kinds and amount of WASTE in mining anthracite, by F. Platt; with a chapter on METHODS of mining, by J. P. Wetherill, Illustrated by 35 figures of mining operations, a plan of the Hammond breaker, and a specimen sheet of the maps of the Anthracite coal fields. 8°, pp. 134, 1881.

AC. Report on MINING METHODS, &c., in the anthracite coal fields, by H. M. Chance. Illustrated with 54 plates and 60 illustrations in the text. 8°, pp. 574, 1883. (With an ATLAS containing 25 plates illustrating coal mining.)

AA. First report of progress of the anthracite survey; PANTHER CREEK BASIN, by C. A. Ashburner; with a determination of the latitude and longitude of Wilkes-Barre and Pottsville, by C. L. Doolittle; and a theory of stadia measurements, by A. Winslow. 8°, pp. 407, 1883.

AA. Second report of progress of the anthracite survey, Part I; Statistics of Production and Shipment for 1883 and 1884. Charles A. Ashburner, geologist in charge.

(**AA.**) ATLAS OF SOUTHERN anthracite field, Part I, containing 13 sheets 3 geological and mine sheets, 3 cross section sheets, 3 columnar section sheets, 1 topographical map sheet, and 1 coal bed area sheet, relating to the PANTHER CREEK BASIN; 1 general map of the anthracite region, and 1 chart of anthracite production from 1820 to 1881. 8°, 1882. Charles A. Ashburner, geologist in charge; A. W. Sheafer and Frank A. Hill, assistant geologists.

(**AA.**) Atlas of Southern anthracite field, Part II. In Press.

(**AA.**) ATLAS OF WESTERN MIDDLE anthracite field, Part I, containing 11 sheets; 4 geological and mine sheets between Delano and Locust Dale, 3 topographical sheets between Quakake Junction and Mount Carmel, and 4 cross section sheets. 8°, 1884. Charles A. Ashburner geologist in charge; A. W. Sheafer and Bard Wells, assistant geologists.

(**AA.**) ATLAS OF WESTERN MIDDLE anthracite field, Part II, containing 11 sheets; 4 geological and mine sheets from Mount Carmel to the western end of the coal field, and 7 columnar section sheets covering the entire field. 8°, 1887. Frank A. Hill, geologist in charge; Bard Wells, assistant geologist.

(**AA.**) ATLAS OF WESTERN MIDDLE anthracite field. Part III. In Press.

(**AA.**) ATLAS OF NORTHERN anthracite field, Part I, containing 6 geological and mine sheets between Wilkes-Barre and Nanticoke, 3 cross section sheets and 4 columnar section sheets. 8°, 1885. Charles A. Ashburner, geologist in charge; Frank A. Hill, assistant geologist.

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(AA.) ATLAS EASTERN MIDDLE anthracite field, Part III. In Press.

GRAND ATLAS, Div. II, Pt. I, 1884. Port-folio containing 26 sheets, (26"× 32"), as follows: 13 sheets Atlas Southern Anthracite Field, Part I, 11 sheets Atlas Western Middle Anthracite Field, Part I, 1 sheet photo views of plaster models in Western, Middle and Southern Fields, and 1 specimen sheet, Report A 2.

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Annual Report, 1886. Part III.

BITUMINOUS COAL FIELDS AND SURROUNDING AREAS.

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I 4. Report on WARREN county, by J. F. Carll. With a colored geological county map, a map of the Warren oil region, and 2 sheets of oil well sections. 8°, pp. 439, 1883. (*Note—The first 147 pages of this book contain oil well records; see under Petroleum Fields below.*)

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K. Report on GREENE and WASHINGTON counties, by J. J. Stevenson. With two county maps. (Showing the calculated local depths of the Pittsburgh and Waynesburg coal beds beneath the surface,) and 3 page plates of general sections. 8°, pp. 419, 1876. (*Note.—Since the publication of this book two colored geological county Maps have been published, and will be found in pocket of volume K 3 described below.*)

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K 4. Pt. I, Report on MONONGAHELA RIVER COAL MINES, from the West Virginia State Line to Pittsburgh, (including some on the Youghiogher-

9510 For mollusk read *Rhynchonella (Stenoschisma) eximia.*
9511 For mollusk read *Rhynchonella (Stenoschisma) eximia.*
9512 For mollusk read *Rhynchonella (Stenoschisma) eximia.*
9520A For Orthis michelini read *O. pennsylvanica.*
9520B For Orthis michelini read *O. leucosia.*
9521 For Orthis michelini read *O. leucosia.*
9522 For Orthis michelini read *O. pennsylvanica.*
9523 For Orthis michelini read *O. pennsylvanica.*
9524 For Orthis michelini read *O. pennsylvanica.*
9529 Spirifera disjuncta.
2530 Spirifera disjuncta.
2531 Spirifera disjuncta and *Spirifera mesocostalis.*
9532 For Spirifera read *Syringothyris randalli.*
9533 For Spirifera read *Syringothyris randalli.*
9534 For Spirifera read *Syringothyris randalli.*
9535 For Spirifera read *Syringothyris angulata.*
9536 Spirifera disjuncta.
9537 Spirifera disjuncta.
9538 For Spirifera read *Syringothyris angulata.*
9539 Rhynchonella (Stenoschisma) eximia.
9540 Rhynchonella (Stenoschisma) eximia.
9541 Rhynchonella (Stenoschisma) eximia.
9542A Athyris spiriferoides.
9542B Meristella incerta.
9543 For Edmondia read *Pararca erecta.*
9544 For Edmondia read *Pararca erecta.*
9545 For Edmondia read *Pararca venusta.*
9546 For Edmondia read *Pararca erecta.*
9547 For Edmondia read *Pararca venusta.*
9548 Aviculopecten æqualata.
9549 Aviculopecten æqualata.
9550 For Aviculopecten read *Crenipecten winchelli.*
9551 For Aviculopecten read *Lyriopecten tricostatus.*
9552 For Aviculopecten read *Lyriopecten alternatus.*
9553 For Aviculopecten read *Lyriopecten alternatus.*
9554 For Avicula read *Leptodesma leiopteroides.*
9555 For Avicula read *Leptodesma leiopteroides.*
9556 For Avicula read *Leptodesma leiopteroides.*
9565 For Bryozoa read *similar to Dictyophyton.*
9566 For Bryozoa read *plant remains.*

9567 For Bryozoa read *plant remains.*
9570 For Sanguinolites read *Mytilops præcedens.*
9571 For Leptæna read *Streptorhynchus chemungensis var.*
9572 For Leptæna read *Streptorhynchus chemungensis var.*
9573 For Leptæna read *Streptorhynchus chemungensis var.*
9574 For Leptæna read *Streptorhynchus chemungensis var.*
9575 For Leptæna read *Streptorhynchus chemungensis var.*
9577 For Aviculopecten read *Crenipecten caroli.*
9578 For Aviculopecten read *Goniophora curvata.*
9579 For Aviculopecten read *Lyriopecten fasciatus.*
9580 For Aviculopecten read *Crenipecten.*
9581 For Schizodus read *Paracyclas erecta.*
9582 Schizodus chemungensis.
9583 For Schizodus read *Paracyclas erecta.*
9584 R. (Stenoschisma) eximia.
9585 R. (Stenoschisma) eximia.
9586 R. (Stenoschisma) eximia.
9587 For Avicula read *Leptodesma.*
9588 R. (Stenoschisma) eximia.
9589 For Avicula read *Spirifera disjuncta.*
9590 For Avicula read *Ptychopteria proto.*
9591 Spirifera disjuncta.
9592 Spiritera disjuncta.
9593 Spirifera disjuncta.
9594 Spirifera disjuncta.
9603 Euomphalus.
9604 Pleurotomaria ——— ? n. sp.
9605 Pleurotomaria.
9606 For Schizodus read *Grammysia communis.*
9607 For Schizodus read *Grammysia communis.*
9608 For Schizodus read *Grammysia communis.*
9609 For Schizodus read *Grammysia communis.*
9610 For Cypricardia read *Leptodesma parallela.*
9611 For Cypricardia read *Leptodesma protextum.*
9612 For Cypricardia read *Ptychopteria falcata.*
9613 For Allorisma read *Ptychopteria beecheri.*
9614 For Allorisma read *Ptychopteria lata.*
9615 For Allorisma read *Ptychopteria lata.*
9616 For Allorisma read *Ptychopteria beecheri.*
9617 For Allorisma read *Ptychopteria beecheri.*

9618 For Allorisma read *Ptychopteria beecheri.*
9619 For Allorisma read *Ptychopteria lata.*
9620 For Allorisma read *Ptychopteria beecheri.*
9621 For Allorisma read *Ptychopteria beecheri.*
9622 For Yoldia? read *Ptychopteria n. sp.*
9623 For Yoldia? read *Ptychopteria galene.*
9624 For Yoldia? read *Ptychopteria galene.*
9625 For Yoldia? read *Ptychopteria galene.*

LIST OF

THE PUBLICATIONS

OF THE

GEOLOGICAL SURVEY OF PENNSYLVANIA.

FROM 1874 TO 1889.

ANNUAL REPORTS.

1885 ANNUAL. J. P. Lesley, State Geologist, 8°, 769 pp., with preface and index, accompanied by Atlas 8°, 8 pl., and maps, 1886, contains following special reports:

1. Oil and Gas. John F. Carll.
2. Vegetable Origin of Coal. Leo Lesquereux.
3. Pittsburg Coal Region. E. V. d'Invilliers.
4. Wellersburg Coal Basin. J. P. Lesley and E. B. Harden.
5. Tipton Run Coal Basin. C. A. Ashburner.
6. Anthracite Coal Region. C. A. Ashburner.
7. Wyoming Valley Fossils. C. A. Ashburner and A. Heilprin.
8. Bernice Coal Basin. C. A. Ashburner.
9. Mehoopany Coal Field. F. A. Hill.
10. Cornwall Ore Mines. J. P. Lesley and E. V. d'Invilliers.
11. Delaware and Chester Kaolins. J. P. Lesley and C. A. Ashburner.
12. Quaternary Geology, Wyoming Valley. C. A. Ashburner, F. A. Hill, and H. C. Lewis.
13. Pressure, &c., of Rock Gas. J. P. Lesley.
14. Progress Geodetic Survey. Mansfield Merriman.

1886 ANNUAL. J. P. Lesley, State Geologist, 8°, in four parts, as follows:

i. Pittsburgh Coal Region. E. V. d'Invilliers.
ii. Oil and Gas Region. J. F. Carll, F. C. Phillips, B. S. Lyman.
iii. Anthracite Coal Region with Atlas. F. A. Hill.
iv. 1. The Lehigh River Cross Section. Arthur Winslow.
2. Paint Ores along the Lehigh River. F. A. Hill.
3. Iron Ore Mines and Limestone Quarries of the Cumberland-Lebanon Valley. E. V. d'Invilliers.
4. Geology of Radnor township, Delaware co., &c. T. D. Rand. With an Atlas.

MISCELLANEOUS REPORTS.

A. A history of the FIRST GEOLOGICAL SURVEY of Pennsylvania, from 1836 to 1858, by J. P. Lesley. With the annual reports of the Board to the Legislature for 1874 and 1875. 8°, pp. 226, 1876.

B. Report on the MINERALS of Pennsylvania, by F. A. Genth; and on the hydro-carbon compounds, by S. P. Sadtler. With a reference map of the State. 8°, pp. 206, 1875.

B2. Report on the MINERALS, by F. A. Genth, continued from page 207 to 238. 8°, in paper cover, pp. 31, 1876. (Bound with B.)

M. Report of CHEMICAL ANALYSES in 1874–5, in the Laboratory at Harrisburg, by A. S. McCreath. 8°, pp. 105, 1875.

M2. Report of CHEMICAL ANALYSES in 1876–8, by A. S. McCreath; Classification of coals, by P. Frazer; Fire-brick tests, by F. Platt; Dolomitic limestone beds, by J. P. Lesley; Utilization of anthracite slack, by F. Platt; Determination of Carbon in iron or steel, by A. S. McCreath. With one folded, plate (section at Harrisburg) and four page plates. 8°, pp. 438, 1879.

M3. Report of CHEMICAL ANALYSES in 1879–80, by A. S. McCreath. With a reference map of 93 iron ore mines in the Cumberland Valley. 8°, pp. 126, 1881.

N. Report on the LEVELS above tide of railroads, canal and turnpike stations, mountain tops, &c., in and around Pennsylvania, in 200 tables, by C. Allen. With a map. 8°, pp. 279, 1878.

O. CATALOGUE of specimens collected by the survey, (No. 1 to No. 4,264,) by C. E. Hall. 8°, pp. 217, 1878.

O2. CATALOGUE (continued from No. 4,265 to No. 8,974); also catalogue of

O3. CATALOGUE (continued from No. 8975 to No. 12872. Also Catalogue of special collections of fossils in stratigraphical order, from 201–1 to C7–4–3; and Revised Catalogue of Randall's collection, from 9467 to 9625. 8°, pp. 260, 1889.

ossils, (pp. 231 to 239.) 8°, pp. 272, 1880.

P. Report on the COAL FLORA of Pennsylvania and the United States. Vols. 1 and 2, (bound together,) by L. Lesquereux. 8°, pp. 694, 1880.

P. Report on the COAL FLORA of Pennsylvania and the United States Vol. 3, with 24 double page plates (lithographed) of coal plants, to accompany P., Vols. 1 and 2. 8°, pp. 283, 1884.

(P.) ATLAS of 87 double page plates (lithographed) of coal plants to accompany P., Vols. 1 and 2. 8°, 1879.

P2. Report on Permo-Carboniferous plants from W. Va. and Greene county, Pennsylvania, by W. M. Fontaine and I. C. White. With 38 double page plates (lithographed). 8°, pp. 143, 1880.

P3. Description of *Ceratiocaridæ*, by C. E. Beecher; and of *Eurypteridæ*, by James Hall. With 8 plates. 8°, pp. 39, 1884.

P4. DICTIONARY OF FOSSILS found in Pennsylvania and elsewhere with electrotype illustrations of the various forms. In 2 volumes and an appendix, by J. P. Lesley. Volume I in press. Volume II, in preparation. 8°, pp. 800±, 1889.

X. GEOLOGICAL HAND ATLAS of the sixty-seven counties of Pennsylvania, with a short explanation of the geological structure of each county, embodying the results of the field work of the survey from 1874 to 1884, by J. P. Lesley. With 62 colored maps and a cross section. 8°, pp. cxii, 1885.

Z. Report on the TERMINAL MORAINE across Pennsylvania, by H. C. Lewis; including extracts from descriptions of the Moraine in New Jersey

by G. H. Cook, and in Ohio, Kentucky and Indiana, by G. F. Wright. With a map of the State, 18 photographic views of the Moraine, and 32 page plate maps and sections. 8°, pp. lvi and 299, 1884.

GRAND ATLAS, Div. I, Pt. I, 1885, port-folio containing maps of 56 counties and parts of counties (scale 2 miles to 1 inch) on 49 sheets (26″×32″.) These maps are duplicate prints on heavy paper of the county maps contained in the reports of progress.

Annual Report, 1886. Part IV.

ANTHRACITE REGION.

A 2. Report on the causes, kinds and amount of WASTE in mining anthracite, by F. Platt; with a chapter on METHODS of mining, by J. P. Wetherill, Illustrated by 35 figures of mining operations, a plan of the Hammond breaker, and a specimen sheet of the maps of the Anthracite coal fields. 8°, pp. 134, 1881.

AC. Report on MINING METHODS, &c., in the anthracite coal fields, by H. M. Chance. Illustrated with 54 plates and 60 illustrations in the text. 8°, pp. 574, 1883. (With an ATLAS containing 25 plates illustrating coal mining.)

AA. First report of progress of the anthracite survey; PANTHER CREEK BASIN, by C. A. Ashburner; with a determination of the latitude and longitude of Wilkes-Barre and Pottsville, by C. L. Doolittle; and a theory of stadia measurements, by A. Winslow. 8°, pp. 407, 1883.

AA. Second report of progress of the anthracite survey, Part I; Statistics of Production and Shipment for 1883 and 1884. Charles A. Ashburner, geologist in charge.

(AA.) ATLAS OF SOUTHERN anthracite field, Part I, containing 13 sheets 3 geological and mine sheets, 3 cross section sheets, 3 columnar section sheets, 1 topographical map sheet, and 1 coal bed area sheet, relating to the PANTHER CREEK BASIN; 1 general map of the anthracite region, and 1 chart of anthracite production from 1820 to 1881. 8°, 1882. Charles A. Ashburner, geologist in charge; A. W. Sheafer and Frank A. Hill, assistant geologists.

(AA.) Atlas of Southern anthracite field, Part II. In Press.

(AA.) ATLAS OF WESTERN MIDDLE anthracite field, Part I, containing 11 sheets; 4 geological and mine sheets between Delano and Locust Dale, 3 topographical sheets between Quakake Junction and Mount Carmel, and 4 cross section sheets. 8°, 1884. Charles A. Ashburner geologist in charge; A. W. Sheafer and Bard Wells, assistant geologists.

(AA.) ATLAS OF WESTERN MIDDLE anthracite field, Part II, containing 11 sheets; 4 geological and mine sheets from Mount Carmel to the western end of the coal field, and 7 columnar section sheets covering the entire field. 8°, 1887. Frank A. Hill, geologist in charge; Bard Wells, assistant geologist.

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K 4. Pt. I, Report on MONONGAHELA RIVER COAL MINES, from the West Virginia State Line to Pittsburgh, (including some on the Youghiogheny

and other streams), by J. Sutton Wall. With a map of the region in a pocket, 12 heliotype pictures, and 26 page plates. 8°, pp. 231, 1884.

L. Report on the YOUGHIOGHENY coke manufacture, by F. Platt; Notes on the coal and iron ore beds, by C. A. Young; Report on methods of coking by J. Fulton, (*See G* below); Report on the use of natural gas in the iron manufacture, by J. B. Pearse and F. Platt; The Boyd's Hill gas well at Pittsburgh, by J. P. Lesley. With a map of the coke region, two folded plates of coke ovens, and page plates and cuts in the text. 8°, pp. 252, 1876.

Q. Report on BEAVER, N. W. ALLEGHENY and S. BUTLER counties by I. C. White. With 3 colored geological county maps, and 21 page plates of sections. 8°, pp. 337, 1878.

Q 2. Report on LAWRENCE county, and special Report on Correlation of the Pennsylvania and Ohio coal beds, by I. C. White. With a colored geological county map and 134 cuts in the text. 8°, pp. 336, 1879.

Q 3. Report on MERCER county, by I. C. White. With a colored geological county map and 119 cuts in the text. 8°, pp. 233, 1880.

Q 4. Report on CRAWFORD and ERIE counties, by I. C. White. With two colored geological county maps and 107 cuts in the text. Also, a Report on a pre-glacial outlet for Lake Erie, by J. W. Spencer. With two maps of the Lake region. 8°, pp. 406, 1881.

R. Report on MCKEAN county, and its geological connections with Cameron, Elk, and Forest counties, by C. A. Ashburner. With 33 page plates of vertical and columnar sections, pictures of Rock city and Olean conglomerate, Wilcox and Kane spouting wells, map of Howard Hill coal field, &c., and an atlas of 8 sheets. 8°, pp. 371, 1880.

(**R.**) ATLAS for McKean county of 8 sheets:—Colored geological county map; three topographical maps; of Buffalo Coal Company tract, Alton coal basin, and Potato Creek coal basin: map of McKean oil district; one sheet of columnar sections between Bradford and Ridgway; and 2 diagram sheets of the Well account and Production account in the Bradford district.

R 2. Part II, report on township geology of CAMERON, ELK and FOREST counties, by C. A. Ashburner.

(**R 2.**) ATLAS for CAMERON, ELK and FOREST counties, of 11 sheets (*Published November, 1884, in advance of the report*):—3 colored geological county maps; 1 anticlinal and synclinal map; 1 topographical map McKean county; 2 tract maps Forest and Elk counties; 1 map Straight Creek coal basin; 2 sheets oil well sections; and 1 sheet coal sections.

V. Report on N. BUTLER county; and (Part 2) special report on the Beaver and Shenango river coal measures, by H. M. Chance. With a colored geological map of N. Butler; a contour local map around Parker; a map of the anticlinal rolls in the 6th basin; a chart of the Beaver and Shenango rivers; profile section from Homewood to Sharon; Oil well records and surface sections; and 154 cuts in the text. 8°, pp. 248, 1879.

V 2. Report on CLARION county, by H. M. Chance. With a colored geological county map, a map of the anticlinals and oil-belt; a contoured map of the old river channel at Parker; 4 page plates, and 83 cuts in the text. 8°, pp. 232, 1880.

For the coal basins of BRADFORD and TIOGA counties, see report G.

For the coal basins of LYCOMING and SULLIVAN, see report G 2.

For the coal basins of POTTER county, see G 3.

For the coal basins of CLINTON county, see G 4.

For the coal in WAYNE county, see G 5.

For the East Broad Top coal basin in HUNTINGDON county, see F.

For the mountain coals in BLAIR county, see T.

For the Broad Top coal measures in BEDFORD and FULTON counties, see T 2.

For the coal basins in CENTRE county, see T 4.

For coal analyses, see M, M 2, M 3.

For classification of coals, see in M 2.

For coal plants, see P, P 2.

For fossil crustaceans in coal slate, see P 3.

For Origin of Coal; Pittsburgh Region and Monongahela Valley; Wellersburg coal basin, Somerset county; and Tipton Run coal-beds, Blair county; see Annual Report, 1885.

Grand Atlas Div. III, Pt. I, 1885, port-folio containing 35 sheets (26″×32″) as follows: 32 sheets relating to portions of the Petroleum and Bituminous Coal Fields, and three sheets relating to the Quaternary period.

Annual Report, 1886. Part I.

PETROLEUM AND GAS.

See reports I, I 2, I 3, I 4, and J, under Bituminous Coal Fields.

See L, for the Pittsburgh gas well, and the use of gas in the iron manufacture.

See Q, Q 2, Q 3, Q 4, for references to oil rocks in Beaver, Lawrence, Mercer, Crawford, Erie, and S. Butler counties.

See K for the Dunkard Creek oil wells of Greene county.

See R, R 2, for descriptions of oil rocks in McKean, Elk, and Forest counties.

See V, V 2, for notes on the oil rocks of N. Butler and Clarion counties.

See H 2 for oil boring at Cherry Tree, Cambria county.

See G 5 for oil boring in Wayne county.

See Annual Report, 1885, for report of progress in the oil and gas region, with special facts relating to the geology and physics of natural gas.

See Grand Atlas, Div. III, Pt. I, under Bituminous Coal Fields.

See Annual Report, 1886. Part II.

NORTH-EASTERN AND MIDDLE PENNSYLVANIA.

(Palæozonic formations from the Coal Measures down.)

D. First report on LEHIGH county iron mines, by F. Prime. With a contour line map of the ore region and 8 page plates. 8°, pp. 73, 1875.

D 2. Second report on LEHIGH county iron mines, by F. Prime. With a colored geological contour line map of the iron region, (in 4 sheets,) a colored geological contour line map of the Ironton mines, 4 double page lithograph pictures of Limestone quarries, and one page plate of *Monocraterion.* 8°, pp. 99, 1878.

D 3. Vol. I. Report on LEHIGH and NORTHAMPTON counties. Introduction by J. P. Lesley; Slate belt, by R. H. Sanders; Limestone belt and iron mines, by F. Prime; South mountain rocks, by F. Prime and C. E. Hall. With 3 lithograph pictures of quarries, 4 pictures of triangulation stations, 14 page plates of sections, and an atlas of maps. 8°, pp. 283, 1883. (*Note.—For atlas see below.*)

D 3. Vol. II, Part I. Report on BERKS county, (*South mountain belt*) by E. V. d'Invilliers. With 10 page plates of sections and Indian relics, and 3 pictures of rock exposures. 8°, pp. 441, 1883. (*Note.—For atlas see below.*

(**D 3.**) ATLAS: One colored geological map of *Lehigh* and Northampton

counties, (*one sheet;*) one colored geological contour line map of Southern Northampton county, (*six sheets;*) a contour line map of the mountains from the Delaware to the Schuylkill, (*eighteen sheets;*) a colored geological contour line index map to the 22 sheets, (*one sheet;*) and 4 sheets of maps o iron mines.

(D 5.) ATLAS of colored geological county maps of CUMBERLAND, FRANKLIN, and ADAMS, (*three sheets;*) and first instalment of contour line map of the South mountains, Sheets A 1, A 2, B 1, B 2, (*four sheets;*) by A. E. Lehman. (D 6)

F. Report on the JUNIATA RIVER district in MIFFLIN, SNYDER, and HUNTINGDON counties, by J. H. Dewees, and on the Aughwick valley and East Broad Top region in HUNTINGDON county, by C. A. Ashburner. With colored geological maps of East Broad Top R. R. and Orbisonia vicinity, (2 sheets;) Three Springs map and section, (2 sheets;) Sideling Hill Creek map and section, (2 sheets,) and Isometric projection at Three Springs, (1 sheet;) six folded cross sections and 22 page plates of local maps and columnar sections. 8°, pp. 305, 1878.

F 2. Report on PERRY county, (*Part I, geology,*) by E. W. Claypole. With two colored geological maps of the county; 17 geological outline township maps as page plates, and 30 page plate cross and columnar sections. 8°, pp. 437, 1884. F 3

G. Report on BRADFORD and TIOGA counties, by A Sherwood; report on their coal fields, (including forks of Pine creek in Potter county,) by F. Platt; report on the COKING of bituminous coal, by J. Fulton. (*See L above.*) With two colored geological county maps, 3 page plates, and 35 cuts in the text. 8°, pp. 271, 1878.

G 2. Report on LYCOMING and SULLIVAN counties; field notes by A. Sherwood; coal basins by F. Platt. With two colored geological county maps (of Lycoming and Sullivan,) a topographical map (in two sheets) of the Little Pine creek coal basin, and 24 page plates of columnar sections. 8°, pp. 268, 1880.

G 3. Report on POTTER county, by A. Sherwood. Report on its COAL FIELDS, by F. Platt. With a colored geological county map, 2 folded plates and 2 page plates of sections. 8°, pp. 121, 1880.

G 4. Report on CLINTON county, by H. M. Chance, including a description of the Renovo coal basin, by C. A. Ashburner, and notes on the Tangascootac coal basin, by F. Platt. With a colored geological county map, 1 sheet of sections, local Renovo map, 6 page plates, and 21 sections in the text. 8°, pp. 183, 1880.

G 5. Report on SUSQUEHANNA and WAYNE counties by I. C. White. With a colored geological map of the two counties and 58 cuts in the text. 8°, pp. 243, 1881.

G 6. Report on PIKE and MONROE counties, by I. C. White. With two colored geological county maps, (1 sheet Pike and Monroe and 1 sheet Wyoming), a map of glacial scratches, and 7 small sections. Report on the Delaware and Lehigh Water Gaps, with two contoured maps and five sections of the gaps, by H. M. Chance. 8°, pp. 407, 1882.

G 7. Report on WYOMING, LACKAWANNA, LUZERNE, COLUMBIA, MONTOUR and NORTHUMBERLAND counties, (*i. e.*, the parts lying *outside* of the anthracite coal fields), by I. C. White. With a colored geological map of these counties (in two sheets), and 31 page plates in the text. 8°, pp. 464, 1883. (*Note.—The colored geological map of* WYOMING *county is published in G 6.*

T. Report on BLAIR county, by F. Platt. With 35 cuts in the text and an Atlas of maps and sections (see below). 8°, pp. 311, 1881.

(T.) Atlas of colored geological contour line map of Morrison's cove, Canoe valley, Sinking valley and country west to the Cambria county line (14 sheets); Index map of the same (1 sheet); colored sections (2 sheets). 8°, 1881.

T 2. Report on BEDFORD and FULTON counties, by J. J. Stevenson. With two colored geological maps of the two counties. 8°, pp. 382, 1882.

T 3. Report on HUNTINGDON county, by I. C. White. With a colored geological map of the county, and numerous sections. 8°, pp. 471, 1885.

T 4. Report on CENTRE county, by E. V. d'Invilliers; also special report, by A. L. Ewing, and extracts from report to Lyon, Shorb & Co., by J. P. Lesley. With a colored geological map of the county, 13 page plates of local maps and sections, and 15 cuts in the text. 8°, pp. 464, 1884.

For report on line of the Terminal Moraine, see Z.

GRAND ATLAS, Div. IV, Pt. I, 1885. Port-folio containing 43 sheets, as follows: 30 sheets relating to the Durham and Reading Hills and bordering valleys in Northampton, Lehigh, Bucks and Berks counties, and 13 sheets relating to the South Mountains in Adams, Franklin, Cumberland and York counties.

GRAND ATLAS, Div. V, Pt. I, 1885. Port-folio containing 35 sheets, as follows: 29 sheets relating to the Topography and Geology of the Palæozoic strata in parts of Cambria, Blair, Bedford, Huntingdon, Mifflin, Centre and Union counties, 5 sheets contain a map and geological cross section along the east bank of the Susquehanna river, Lancaster county, and 1 sheet contains cross sections of the Philadelphia belt of the Azoic rocks.

For report on Cornwall Iron Ore Mines, Lebanon county, and the Tipton Run coal beds, Blair county, see Annual Report, 1885.

For report on the Iron Ore Mines and Limestone Quarries of the Cumberland-Lebanon Valley, see Annual, 1886, Part IV.

SOUTH-EASTERN PENNSYLVANIA.

C. Report on YORK and ADAMS counties, by P. Frazer. With one folded map of a belt of York county through York and Hanover, 6 folded cross sections, and two page plate microscopic slices of dolerite. 8°, pp. 198, 1876.

(*Note.—The colored geological county map of* YORK *is published in the* ATLAS *to C 3*).

C 2. Report on YORK and ADAMS counties, (South Mountain rocks, iron ores, &c.), by P. Frazer. With one general map of the district, 10 folded cross sections, and 5 page plates. 8°, pp. 400, 1877. (*Note.—The colored geological county map of* ADAMS *is published in D 5*).

C 3. Report on LANCASTER county, by P. Frazer. With nine double page lithographic views of slate quarries and Indian-pictured rocks, one plate of impressions on slate, and one page plate microscopic section of trap, and an atlas. 8°, pp. 350, 1880.

(C 3.) ATLAS of 13 sheets: Colored geological map of York county; colored geological map of LANCASTER county; Susquehanna river section. (Sheets 1, 1A, 2, 2A, 3, 4); Lancaster section; Pequea section; Muddy run section; Chestnut Hill mines; Gap Nickel mine.

C 4. Report on CHESTER county; General description, pp. 214, by J. P. Lesley; Field notes in the townships, pp. 215–354, by P. Frazer. With a